TECHNOLOGY DEPT.

First Copy

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The Newspaper of the Industry

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JAN 13 1939

TRADE-INS LOOM BIG IN 1939 SALES QUOTAS; 20% OF '38 HOUSEHOLD SALES REPLACEMENTS

THE COLD CANVASS

By B. T. Umor

Arctic Explorer

Here is someone who knows plenty about freezing temperatures and he's not in the refrigeration business. He is Dave Irwin, Arctic explorer, about whom the book "Alone Across the Top of the World" was written.

On a recent visit to the NEWS offices he spun some grand tales about his adventures in the frozen wastes and informed us that his next adventure will be an air-conditioned exhibit of a real Eskimo family at the New York World's Fair.

* * *

International House

Another caller was Kaj Aage Hartvig-Hansen, refrigeration engineer from Copenhagen, Denmark. His reports on the Danish industrial and political setup were very revealing.

Complimented the American press by remarking that he learned more about Germany and Russia from our papers than those of his own country, although Denmark is within shouting (or shooting) distance of Hitler's and Stalin's backyards.

We get a lot of new angles from these visitors who drop in from far corners of the world seeking information about the industry. Such friends are giving an "International House" atmosphere to the NEWS offices and making it a more interesting place than ever.

* * *

Discounting Does Not Pay

Comes now a love story with a sad ending. Concerns a Detroit bus driver who kept his love on fire by buying electric refrigerators with a small down payment, selling them at a discount for cash, and making no more payments.

Until the coppers stepped in and put the refrigerator romeo in a "cooler" he couldn't sell, he was doing a thriving "discount" business. Faced with shame, his love lost, he was reported to have muttered, "Boys, discounting does not pay."

* * *

Cold Blood In War

Refrigeration will have a leading role in the next war. Because the powers have calmly decided that the next wholesale carnage will spill more human blood than any previous

(Concluded on Page 38, Column 3)

Cutler-Hammer Names Two Executives

MILWAUKEE—E. W. Seeger has been promoted to the position of chief engineer of Cutler-Hammer, Inc., manufacturer of controls and other electrical apparatus, and P. B. Harwood has been appointed assistant chief engineer.

Prior to their respective advancements, Mr. Seeger was assistant chief engineer and Mr. Harwood was general engineering supervisor of the company.

Mr. Seeger joined Cutler-Hammer in 1913, shortly after having received a degree from Ohio State university. During the ensuing 15 years he occupied various positions in shop and

(Concluded on Page 38, Column 3)

Low Temp Section, Sterilamp Feature New S-W Model

CHICAGO—Kingpin of the 1939 Stewart-Warner refrigerators is the Dual-Temp, a 7-cu. ft. two-temperature job which will retail at a little less than $300. Distributors meeting in Chicago last week-end saw three other Stewart-Warner refrigerator lines—one of them with a hermetically-sealed unit. They saw new electric and gas ranges, and radios. But what really caught their eyes was the Dual-Temp.

Made only in the one size, the Dual-Temp has not only two different food compartments, each maintaining separate temperature-humidity conditions, but also has (in the larger, higher temperature compartment) a Sterilamp.

Fitted just behind the temperature

(Concluded on Page 4, Column 4)

Leonard Men See '39 As Better Year

DETROIT—Leonard's 1939 series of household electric refrigerators and its advertising and merchandising plans for the new year are being shown to members of the organization's nation-wide distributor group in a series of "miniature" conventions which opened last Friday and are being continued throughout this week.

Thought to be an innovation in business meetings of their type, the small conventions are finding favor with Leonard distributors, says Ray Legg, general sales manager.

Bringing together distributors in small groups, the meetings combine all the advantages of round-table discussions of mutual problems with the showmanship and drama of larger meetings, he reports.

First of the conventions was called to order on Jan. 6, and its sessions lasted through Saturday. Second convention, identical with the first as

(Concluded on Page 8, Column 4)

Appliances In Spotlight At Dept. Store Meeting

NEW YORK CITY—Answers to such far-flung problems as how the department store should approach the sale of air conditioning, how many brands of appliances a store should handle, and the possibility of joint servicing of appliances will be sought at an "open forum" meeting of appliance department men on the afternoon of Jan. 18 during the National Retail Dry Goods Association convention here.

Discussion at the meeting will be led by members of the N.R.D.G.A. committee on merchandising major appliances, and the session will be under the chairmanship of David L.

(Concluded on Page 4, Column 1)

Warren Norge Takes On Diesel Engine Line

NEW YORK CITY—Warren Norge Co., Inc., Norge distributor, has taken on distribution of Covic Diesel engines in this territory. The Covic line consists of small Diesels, some of them designed for marine and others for industrial purposes.

Warren will exhibit the line at the Motor Boat show, which opens Jan. 6 in Grand Central Palace.

About Half of Traded Units Being Rebuilt And Sold Again

Low-Income Market Being Supplied At Modest Prices

DETROIT — Estimates by AIR CONDITIONING & REFRIGERATION NEWS, based upon reports of manufacturers, distributors, and dealers, indicate that about 20% of the U. S. sales of household electric refrigerators during 1938 involved the trade-in or replacement of a unit previously used by the same family. In brief, the replacement market has now become big-volume business.

A study of the statistics collected by the NEWS during the past years shows that the replacement market will be an increasingly large factor in shaping the policies of the industry from now on.

To get a picture of the situation, it it only necessary to consider some of the round figures published in this issue.

First, the tabulations show that cumulative world sales of household units to distributors and dealers by all U. S. manufacturers have reached a cumulative total of 15 million. Of this number, exports amount to a little over 1 million, leaving total U. S. sales of approximately 14 million units.

Allowing less than 2 millions for

(Concluded on Page 14, Column 1)

Frigidaire Troupes Go On Road This Week

DAYTON, Ohio — Equipped with practically every device known to the theatrical world, three separate crews of Frigidaire representatives, each traveling a different direction, leave their headquarters here Jan. 13 for a four week's sales convention itinerary, carrying the story of 1939 Frigidaire products to dealers and salesmen throughout the nation.

Although Frigidaire conventions are usually prepared behind closed doors, unusual secrecy attaches to the rehearsals this year, and practically no authentic information has

(Concluded on Page 38, Column 3)

Industry Moves on Chicago For First All-Industry Show

Hotpoint '39 Models Aimed To Fit Pattern Of 'Ensemble' Selling

CHICAGO—Thirteen models ranging in size from 3 to 16-cu. ft. capacity comprise the Hotpoint refrigerator line for 1939 just introduced by Edison General Electric Appliance Co., Inc., and said to include new sales features of beauty and convenience.

Five models in the Standard line range from 3 to 6-cu. ft. capacity, three Deluxe models from 5 to 8 cu. ft., four Imperial models from 6 to 16 cu. ft., and one Special model of 6-cu. ft. size.

Massive design has been combined with streamlined grace to produce a new cabinet design for the models in the Deluxe and Imperial lines. Like other Hotpoint products, the refrigerators are designed to harmonize with other equipment in the all-electric kitchen. Fitting back to

(Concluded on Page 39, Column 1)

Philadelphia Market Is Improved By Trade-In Reconditioning Plan

PHILADELPHIA—Use of a recently established centralized service for reconditioning used electric refrigerators taken in by dealers on sales of new models is proving a satisfactory solution to the problem of profitable refrigeration merchandising in this highly saturated territory, reports the Electrical Association of Philadelphia.

The reconditioning service is one section of a two-part plan, other element of which consists of a definite schedule of trade-in allowances on used refrigerators to eliminate the "hit-or-miss" methods often a source of loss to dealers in the past.

With the electric refrigerator saturation in this area at approximately 56%, the question of trading for and disposing of used refrigerators at a profit has become a definite factor

(Concluded on Page 4, Column 3)

Banquet Monday Night, Association Meetings, Are On Schedule

CHICAGO—With interest in the first annual All-Industry Refrigeration and Air Conditioning Exhibition at a high pitch and final program plans under way, the industry awaits only the official opening of the big show at 10 a.m. Monday, Jan. 16 to get it off to a flying start on 1939 business.

Official programs for both the Exhibition and the All-Industry Banquet to be held on the night of Jan. 16 are in the hands of the printer, together with other material to be used by the show management, reports M. W. Knight, sales manager of Peerless of America, Inc., and general chairman of the event.

Exhibitors will begin setting up their displays at noon Saturday, Jan. 14, and everything should be in readiness well in advance of the show's opening at 10 a.m. Monday.

Visitors to the exhibition will experience no delays, Mr. Knight said. Registration desk will be opened at 8 a.m. on Monday, on the lower floor of the Stevens hotel and immediately

(Concluded on Page 2, Column 1)

Service Engineers Add To Chicago Program

CHICAGO—A program packed with plenty of practical information for the independent service man has been prepared by the Illinois Association of Refrigeration Service Engineers for its mid-winter meeting at the Stevens hotel Jan. 18, in conjunction with the All-Industry Refrigeration and Air Conditioning Exhibition.

The "conference on chapter activities" scheduled for the forenoon session is attracting wide attention on the part of officers of local refrigeration service engineers chapters, officers of the Illinois association report. Many of them are coming to Chicago especially for this one session, advance registrations indicate.

Four talks relating to individual chapter activities are to be given, after which the session will be thrown open to round-table discussion by chapter officers and men who have been invited to participate. All members of accredited R.S.E.S. chapters, however, are eligible to attend the conference.

Addresses to be given at the conference include:

"New Ideas for Chapter Meetings,"

(Concluded on Page 39, Column 3)

Conditioner Dealers To Meet Tuesday

CHICAGO — Organization meeting of the proposed Air Conditioning Dealers and Contractors Association will be held at 2 p.m. Tuesday, Jan. 17, at the Stevens hotel here, according to the management of the First All-Industry Refrigeration and Air Conditioning Exhibition.

Notice of the exact place of the meeting will be posted in the hotel and information may be obtained concerning the meeting at the time of registration.

John H. Keller of Mechanical Heat & Cold, Inc., Detroit, who is presi-

(Concluded on Page 12, Column 5)

Furniture Buyers View 1939 Models, But Only One Of 4 Chicago Shows Has Much of a Display

By George F. Taubeneck

CHICAGO—Two of Chicago's four January home furnishings shows opened Sunday. One of them, in the Palmer House, had not a single electric refrigerator on display; although it was reported that Landers, Frary & Clark would have a Universal refrigerator showing in a day or so. This show features small appliances and home furnishings.

At the Stevens show, however, 12 manufacturers of household electric refrigerators exhibited their 1939 lines. They were Copeland, Crosley, Dayton (Heinz & Munschauer), Gale, General Electric, Gibson, Jewett, Potter, Speed Queen, Westinghouse, Williams Ice-O-Matic, and Universal Cooler.

Newest name in the group is that of Gale, which henceforth will be applied to the household and commercial refrigeration products and

(Concluded on Page 8, Column 1)

CHICAGO—Two home furnishings marts opened Monday here, one in the Furniture Mart, and one in the Merchandise Mart—with little to show buyers interested in refrigeration equipment.

In all the Merchandise Mart, world's largest building, there was only one household electric refrigerator on display, an Apex two-temperature job. Zero Plate showed a couple of commercial cabinets, with condensing unit equipment by Westinghouse, and there were a few iceboxes scattered around.

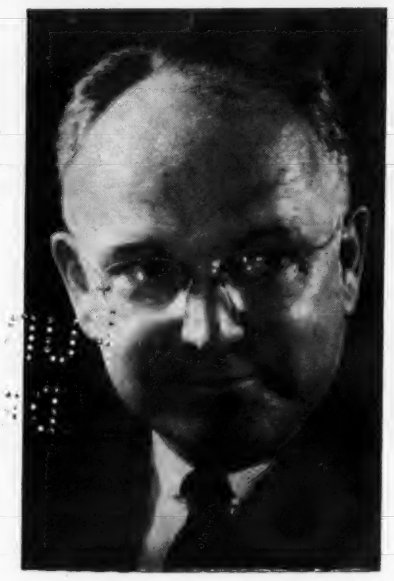
Over in the Furniture Mart things were a little better. Eight household electric refrigerators had space there: Continental, Dayton, Frigidaire, Gale, Gibson, Norge, Speed Queen, and Universal Cooler.

Frigidaire startled many with something different in the way of an

(Concluded on Page 8, Column 2)

Speakers at All-Industry Banquet

GARDNER POOLE
Vice President, Frosted Foods Corp.,
President A. S. R. E.

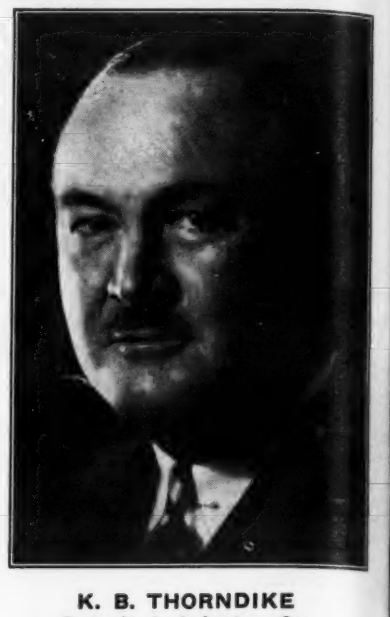


HENRY W. BURRITT
Vice President in Charge of Sales,
Nash-Kelvinator Corp.

Leaders of the Parts and Supplies Association

J. D. COLYER
Wolverine Tube Co.
(President, Manufacturers Assn.)

M. W. KNIGHT
Peerless of America, Inc.
(Chairman, Exhibition Com.)



K. B. THORNDIKE
Detroit Lubricator Co.
(Chairman, Publicity Com.)

Refrigeration's First Exclusive Show Opens Monday In Chicago

(Concluded from Page 1, Column 5)

in front of the entrance to the exhibition hall.

Badges for most of the exhibitors, and for a number of others who already have expressed their intention of attending the show, have been made up, and are ready for delivery in advance of the official opening of the registration office.

Except for a few committee meetings, the opening of the National Refrigeration Supply Jobbers Association's convention at 2 p.m., and the A.S.R.E. reception for National President Gardner Poole in the late afternoon, all day Monday can be devoted to attendance at the Exhibition.

BANQUET PLANS

The show closes at 6 p.m., however, to make way for the All-Industry Banquet an hour later, which all exhibitors will want to attend. Music during the dinner hour will be followed by a short entertainment program, after which three important addresses will be made.

Dr. Poole will open the speaking program with an address on "The Contribution of Science in Refrigeration to Well-Being, Health, and Comfort."

He will be followed by H. W. Burritt, Kelvinator vice president in charge of sales, who will give an inspirational talk from the sales promotional side of the business under the topic "We, the People of a United Industry."

Picking up the trend of the previous speakers, F. M. Cockrell, publisher of AIR CONDITIONING & REFRIGERATION NEWS, will peer into the possibilities of the industry's immediate future with "A Toast to 1940."

Attendance at the banquet is open to everyone in the industry. Advance reservations may be made through the Exhibition Manager's office, 111 W. Washington St., Chicago, or can be made on the show's opening day. Tables may be reserved for groups desiring to sit together.

HOW TO GET IN

Tickets and reservations will be available at the general registration counter all day Monday.

All persons attending the exhibition will be required to register, but there will be no admission fee. Registrants will be given badges which will admit them to the exhibition hall all during the show. For all events outside the exhibition hall, admission tickets will be required. All such events will be listed in the official exhibition program book, together with information on where tickets can be obtained.

National and regional association meetings will be held all during the four days of the show. In addition to the meeting of Mid-West sections of A.S.R.E. Monday and the convention of National Refrigeration Supply Jobbers, similar meetings will be held by the Illinois Association of Refrigeration Service Engineers, Air Conditioning Dealers and Contractors Association, Refrigeration Supplies & Parts Manufacturers Association, and others.

Committee meetings of jobbers will be held in the Stevens hotel on Sunday, the day preceding the opening of the all-industry show. Membership meetings will begin Monday afternoon, and will continue through Tuesday and Wednesday.

On Tuesday, jobbers and parts manufacturers will meet in a joint membership luncheon meeting, and the farewell luncheon meeting for jobbers will take place Wednesday noon.

The meeting of mid-west sections of American Society of Refrigerating Engineers on Jan. 16, honoring National President Poole, is being sponsored by the Chicago section, of which Deane F. Perham is chairman. Headquarters of the meeting will be in the west ballroom on the Stevens' third floor. In addition to Chicago engineers, section representatives from Detroit, Milwaukee, and St. Louis also will be in attendance at the meeting.

Meetings of the Refrigeration Supplies & Parts Manufacturers Association will open on Wednesday, Jan. 18 with a session of credit managers of various companies. General membership meeting of the organization will be held on Jan. 19.

A luncheon meeting of all exhibitor companies in the show also is scheduled for noon on Jan. 19.

Many of the exhibitor companies also are holding national or sectional meetings of their representatives in Chicago during the week of the show, to give their men an opportunity to see new products and greet old friends.

In addition to meetings scheduled to be held at the Stevens, several other events of interest to men in the refrigeration field will be going on in Chicago next week.

Among these are the Chicago Poultry Show, put on under the auspices of the National Association of Refrigerated Warehouses, the mid-year meeting of the National Association of Practical Refrigerating Engineers, American Brewer's Association, American Institute of Meat Packers, and Coin Vending Machine Manufacturers' Association.

All of these organizations are interested in some degree in the new developments in refrigeration, and many of them are boosting the show and arranging reservations for the All-Industry Banquet, it is reported.

Home furnishings shows, including exhibits of household refrigerators and various other home appliances, also will be in progress during the show at both the Merchandise Mart and the American Furniture Mart, either of them only a short distance from the Stevens.

Elaborate arrangements for the entertainment of wives of persons attending the all-industry show have been made by a committee composed of representatives of all the industry organizations meeting during the week.

Mrs. M. W. Knight is chairman of this committee, and other members are Mrs. W. A. Honeychurch, Peerless of America; Mrs. J. W. Bostwick, Fairbanks, Morse & Co.; Mrs. Hal Clay, Dole Refrigerating Co.; Mrs. George Franks, Imperial Brass; Mrs. J. B. McGuan, Automatic Heating & Cooling Co.; Mrs. H. W. Blythe, H. W. Blythe Co.; Mrs. Irving Alter, Harry Alter Co.; Mrs. Willis Stafford, Mrs. Eugene White, Mrs. George Monjian, and Mrs. Paul Kreuger.

The first five women represent manufacturers, the next three jobbers, and the last four are wives of refrigeration service engineers.

LADIES TO SEE 'CRADLE'

On the entertainment program for the ladies is a trip through Marshall Field & Co. and an afternoon tea, visits to the Edgewater Beach hotel and the famous "Cradle" at Evanston, Ill., a behind-the-scenes tour of the Stevens, and a trip through the Merchandise Mart, including a visit to National Broadcasting Co. headquarters and attendance at a broadcast.

Special trips also will be arranged for parties desiring them. Along these are tours of the Chicago Art Museum, Field Museum, Shedd Aquarium, and other places of interest.

Regular women's headquarters will be established in the South Lounge on the Stevens' mezzanine floor, and members of the committee will be on hand to greet newcomers and help them become acquainted with each other. A note of welcome and a schedule of events will be sent to all women who register with their husbands at the show.

They Worked Out Plans For the First All-Industry Exhibition

FRANK J. GLEASON
Vice President in Charge of Sales,
Copeland Refrigeration Corp.

R. M. McCLURE
Secretary, Manufacturers Assn.
(Manager All-Industry Exhibition)

W. C. ALLEN
Vice President in Charge of Sales,
Modern Equipment Corp.

HERMAN GOLDBERG
Herman Goldberg Co.

They Have Planned For Entertainment of Wives In Chicago

This is the ladies reception and entertainment committee which has been busy making special arrangements for the entertainment of wives of industry men who will attend the All-Industry Refrigeration and Air Conditioning Exhibition next week in Chicago.

Top row (left to right) Mrs. Willis Stafford, whose husband is an official of the Service Engineers Society; Mrs. J. W. Bostwick, wife of the manager of the Fairbanks-Morse air-conditioning department; Mrs. Paul Kruger, whose husband is a member of Service Engineers Society; Mrs. G. Franck, whose husband is with Imperial Brass Mfg. Co.; and Mrs. W. A. Honeychurch, whose husband is with Peerless of America, Inc.

Bottom row (left to right) Mrs. H. W. Blythe, wife of the Chicago refrigeration parts jobber; Mrs. E. H. White, whose husband is secretary of the Illinois association of R.S.E.S. chapters; Mrs. M. W. Knight, whose husband is sales manager of Peerless and chairman of the exhibition committee; Mrs. J. B. McGuan, whose husband is connected with Automatic Heating & Cooling Supply Co., a parts jobber; and Mrs. Irving Alter, wife of an executive of the Harry Alter Co., parts jobber.

Announcing the NEW

GUN COOLER

PACKAGED REFRIGERATION BY PEERLESS

12,000 B.T.U. PER HOUR

6,000 B.T.U. PER HOUR

1,800 B.T.U. PER HOUR

1,200 B.T.U. PER HOUR

EQUIPPED WITH THE THERMEK COIL—THE MOST EFFICIENT FOR ITS WEIGHT AND SIZE

COMPLETE SIZE RANGE OF 7 UNITS

We predict that the Gun Cooler will explode all previous ideas on sales and speed of installations. It is easier to sell because it is pre-engineered, and increases storage space. It is easier to install because it is complete—ready for hookup to any fixture. It reduces operating costs because it operates at higher back pressures, and it produces better refrigeration with higher humidity. *What a combination!*

Compact in size but a giant in performance, the Gun Cooler sucks in warm air at the top, then forces it through the Thermek Cooling Coil, and finally discharges a flood of cold air at the bottom of the fixture. This cold air slowly rises through the shelving or stored products, producing ideal refrigeration without burning or drying. Temperature is uniform in all parts of the cooler. There are no dead spots . . . no warm spots.

Modern in design, the new Peerless Gun Cooler also scores a bull's-eye in appearance. Its polished aluminum case harmonizes with any fixture. The Thermek Coil is pure copper, tin-plated for greater resistance to rust and corrosion.

You can examine these amazing new Gun Coolers at our booths 116, 117 and 118, First All-Industry Exhibition, Jan. 16-19th, Hotel Stevens, Chicago, and at any of our factories.

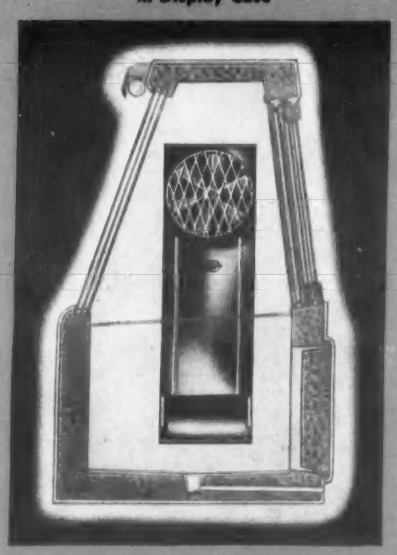
Stock up on these new packaged units NOW, and be prepared to make immediate installations as soon as customers sign your orders.

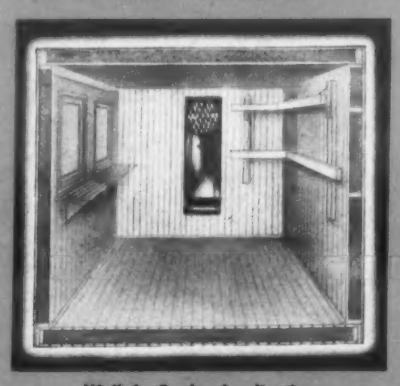
Manufacturers, investigate the advantages of including the Gun Cooler in your equipment.

FOR EVERY TYPE OF REFRIGERATOR FIXTURE REQUIRING A CAPACITY UP TO 1 TON REFRIGERATION IN 24 HOURS

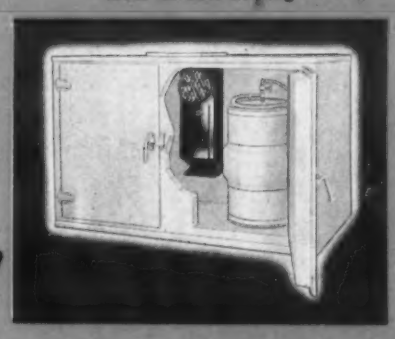
Gun Cooler in Refrigerator

Below: Installation of Gun Cooler in Display Case




Walk-In Cooler Application

Ideal for Beer Cooling



Easy to Sell
Easy to Install

LOW IN PRICE!

PEERLESS OF AMERICA, INC.

MAIN FACTORY • GENERAL OFFICES: 515 West Thirty-fifth Street, Chicago

NEW YORK FACTORY
43-20 34th STREET
LONG ISLAND CITY

PACIFIC COAST FACTORY
3000 S. MAIN STREET
LOS ANGELES

EXPORT DIVISION:
P. O. BOX 636, DETROIT,
MICHIGAN, U. S. A.

Appliances To Lead Off NRDGA Meeting

(Concluded from Page 1, Column 2)

Edelmuth, of the Associated Merchandising Corp., New York City.

The forum will open with a consideration of the following topics: The outlook for the major appliance year of 1939; What factors keep department stores from making a profit in appliances and what should be done about them; How many brands should a store handle, and why.

Wanted—Typical Consumer

Wanted by the National Retail Dry Goods Association, whose 5,700 department and specialty store members have once or more as their customers most of the 130,000,000 people in the United States—a "typical consumer."

The association wants to interview her during its twenty-eighth annual convention, to find out her average shopping experiences and her reactions to the merchandise and services in her visits through the stores. Suitable compensation will be offered.

Following qualifications are sought in the "typical consumer":

She should be a housewife in her 30's, mother of two or more children.

Her family income should range from $2,500 to $4,000 a year.

She should herself perform most of the work in the home.

She should be a home-lover in the sense that she reveals a reasonable amount of taste in the furnishing and decoration of her home.

She should be intelligent, observing, and discriminating, but she needn't be a fabrics or materials expert.

A talk on "Planning the Salesman's Effort: More Intelligent and Effective Direction for Appliance Salesmen; Keeping Alive the Contact with Customers; Follow-Up Sales Technique" by Philip DuBoff, of Bloomingdale's New York City, will lead off another discussion.

Following this, J. McIver of Maxon, Inc., advertising agency, New York City, will inaugurate consideration of the advertising side of appliance merchandising with a talk on "Getting the Real Sales Story in the Ads."

"Is Joint Servicing of Appliances Possible?" Sidney Rosenberg, home furnishings merchandising manager of Associated Merchandising Corp. will ask, to introduce that subject.

Also on the open forum agenda are considerations of the following problems: How should a department store approach the sale of air conditioning? Can a department store advantageously act as a distributor as well as a dealer?

Members of the association's committee on merchandising major appliances, who will lead general discussion at the meeting, include:

T. P. Magee, Ed Schuster & Co., Inc., Milwaukee; John J. Daley, Gimbel Bros., Philadelphia; K. Thompson, R. H. White Co., Boston; S. L. Stein, B. Gertz & Co., Jamaica, N. Y.; George T. Stevens, Allied Department Stores, New York City.

James Ginsburg, Abraham & Straus, Inc., New York City; Philip DuBoff, Bloomingdale's, New York City; Irving H. Kohn, Hochschild Kohn & Co., Baltimore; John Bannigan, Quackenbush Co., Paterson, N. J.; Frank Cashman, G. Fox & Co., Hartford; Max Fischmann, Kaufmann Department Store, Pittsburgh.

Reconditioning Plan Helps Dealer Sales

(Concluded from Page 1, Column 4)

which must be considered in all future sales, the association states in its report to dealers on the new plan.

To ease the dealers' problem of getting trade-in refrigerators into shape for resale, a company known as Associated Refrigerator Plant, Inc. has been set up to provide a centralized rebuilding service.

Located at 3028 Hunting Park Ave., the plant has 10,000 sq. ft. of floor space, and is equipped to recondition 300 used refrigerators a week. It is said to be the only plant in the United States offering reconditioning service on such a scale.

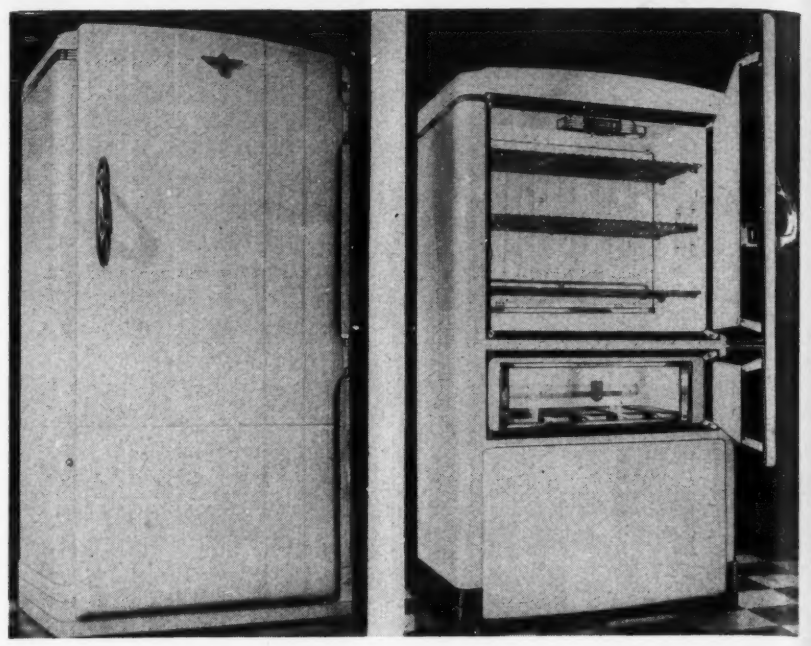
Under its agreement with dealers, the plant will recondition all types of refrigerators in one-door models up to 10 cu. ft. at a flat price of $20.

The reconditioning fee also includes free service on the units for a period of 90 days from the time they are "started up" for new users.

Where the dealer does not desire to have the trade-in refrigerator reconditioned for re-sale, the company will purchase the refrigerator from him for one half the listed trade-in price.

In this way, the association points out, dealers who trade for used refrigerators have the option of having them reconditioned at a flat rate, to be resold to customers in the lower income classes; or, if they prefer, they may sell the units direct to the plant.

Two Compartments In New S-W Refrigerator



The Duo-Temp, top model of Stewart-Warner's 10-model household electric refrigerator line for 1939, has two compartments, lower one with a glass door, for ice making and frozen food storage, upper one with a Sterilamp and non-frosting plate coil, for storage of ordinary foodstuffs and vegetables.

New Food-Preserving Ideas In S-W Line

(Concluded from Page 1, Column 2)

control in the ceiling of the food compartment, this "sterilizer ray lamp" is designed to aid food protection by killing bacteria and sterilizing the air surrounding the stored food.

The new hermetically-sealed reciprocating compressor powers the lowest-priced ("Challenger") line of refrigerators, with 4.6, 5.7, and 6.5-cu.-ft. cabinets. Deluxe and Super Deluxe lines (three models each) and the Dual-Temp are powered by the standard Stewart-Warner twin-cylinder compressor.

Maintaining an average temperature of 22°, the lower and smaller compartment in the Dual-Temp will keep frozen foods, as much as 40 lbs. of ice, and will freeze ice cream. It has a glass door.

The upper compartment has a plate coil at the rear which is said to never frost. Higher humidities in this compartment, which is cooled to 45°, permit the storage of uncovered vegetables, such as lettuce and celery, without dehydration.

As in previous years, Stewart-Warner refrigerators emphasize convenience in interior design. There are sliding, tilting and telescoping shelves. There's the familiar "Sav-a-step" (lift-out shelf compartment). There are a removable, button-release serving tray, a mechanical ejector for ice cubes, and other features.

Super Deluxe models are available in capacities of 5.5, 6.3, and 7.5-cu. ft., and Deluxe units in sizes of 4.5, 5.5, and 6.3 cu. ft. Models of the first series have the Econ-o-Lite, a feature introduced by Stewart-Warner in its 1938 models. Set along one side of the lower part of the cabinet, this light glows when the mechanical unit runs, so that users may see for themselves the operating time required for proper food preservation.

A cold storage chest for storage of meats and similar perishable foods also is a feature of Super Deluxe units, as is a three-piece "handy set" of glass-covered dishes, one large and two small, for storage of leftovers.

Units in this series also are equipped with twin drawers for storage of fruits and vegetables, and have a 16-point cold control.

Deluxe models, while minus some of the features of the Super Deluxe line, have 12-point cold control, a "food freshener" container which can be stored on any shelf, round wire shelving instead of the diamond grid type, and a tilting shelf on one side of the evaporator. The Sav-A-Step feature is standard in all except Challenger models.

This lower-price line has 12-point temperature control, safety zone temperature control, round wire shelving, glass chilling tray, a removable evaporator shelf, and automatic interior light.

The hermetically-sealed reciprocating compressors in this series use Freon-12 as the refrigerant, whereas the twin-cylinder models use sulphur dioxide. Insulation in Challenger models is Balsam Wool in the cabinet proper and Fiberglas in the door, while that in the higher-price models is glass wool throughout.

Exterior finish on all models is Dulux, with interior finish of porcelain. All models except the smallest Challenger unit have one or more ice cube trays with "Snap-Out" grid, for easy ice cube removal.

For its initial invasion of the electric range market, Stewart-Warner offers six models, graduated to meet all steps of the market.

All models have welded steel frames; one-piece acid-resisting porcelain steel tops; porcelain finish throughout, including ovens and storage compartments; large ovens, insulated with glass wool; a 6-quart "Econ-O-Way" cooker; two 6-inch and one 8-inch surface units, all surface units using a new rod-type heating element, rigidly held to prevent warping, and claimed to be the fastest heating element yet developed.

Features of the "top" models include five-speed heat controls on all surface units; six selective arrangements of oven heating elements, plus thermostatic heat control; a current control panel which is illuminated when any energy is flowing; and an on-and-off clock-switch to control oven, Econ-O-Way cooker, or an electric accessory at the operator's will.

All models have porcelain storage compartments, and all but the two lower-price units have two additional storage drawers for utensils. Four top models have 660-watt convenience outlet on the backsplasher. Leader of the line, the Diana, has oven-timer and control with lamp and condiment set as standard equipment.

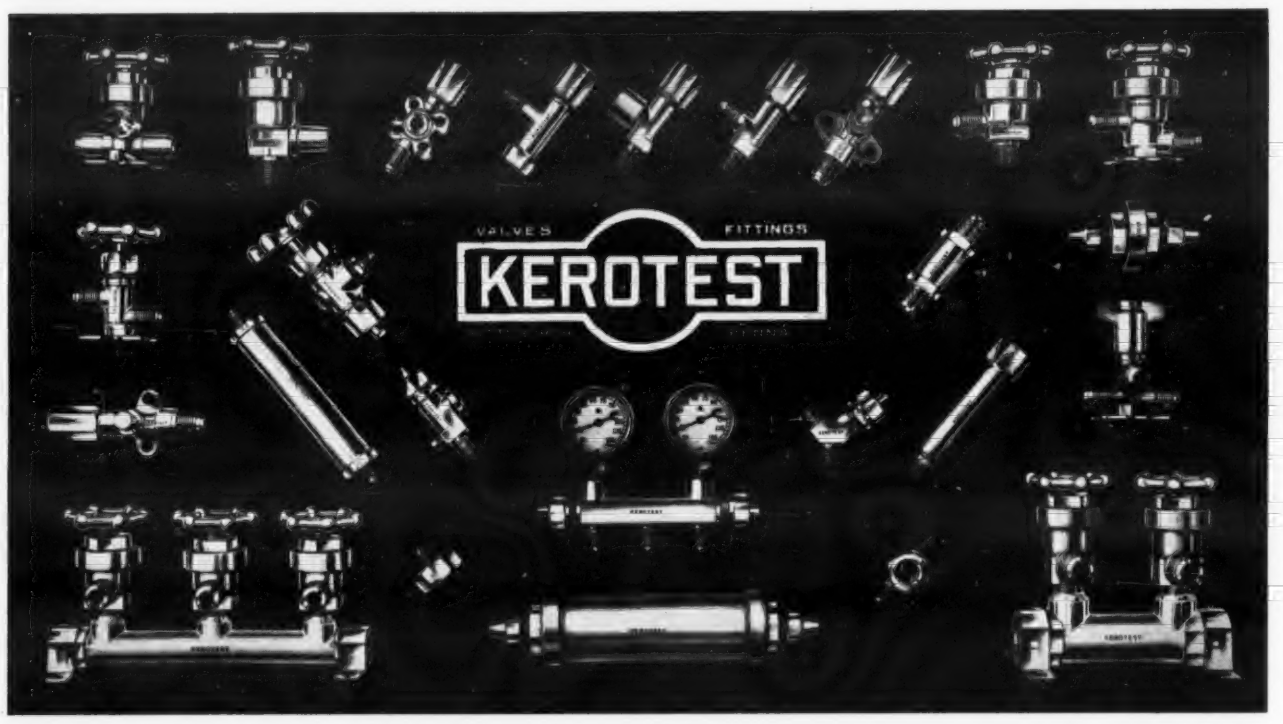
Among the eight new radios introduced at the convention are models ranging in price from $9.95 for the Campus, a new small plastic table model, to $69.95 for the large console, and including a radio-phonograph combination. Console model is 41 inches high, with eight working tubes, an eight-button Magic Keyboard, and standard and short wave reception.

John F. Ditzell, who wears the new title of appliance sales manager, was chairman of the three-day session. He conducted his distributors through an intensive engineering and merchandising school, which began each morning at 9:30 and didn't end until 7:20 the first night, 6:10 the second, and noon on Saturday.

Each evening there were individual conferences between executives and distributors. There were no shows, playlet, or high-kickers, but so much information was passed out that the Edgewater Beach desk clerk ran out of paper for notes four times during the three days.

Chairman of the Board, J. S. Knowlson, President J. E. Otis, Jr., and Vice President F. A. Hiter attended every session and appeared on the program. Hays MacFarland and A. B. Dicus of the Hays MacFarland advertising agency were headlined, along with Arthur Hirose of McCall's magazine, Dr. Matthew Luckiesh of General Electric, Home Economist Frances Weedam, and William Tuttle of Tuttle & Kift, industrial stylists.

L. L. Kelsey was introduced as sales manager of the radio division.



IN BOOTH 97

At the "All-Industry Refrigeration and Air Conditioning Exhibition" . . . Stevens Hotel—Chicago

You will find a complete display of KEROTEST proved-in-service valves and fittings for every modern air conditioning and refrigeration requirement.

Drop In and See Us

KEROTEST MANUFACTURING CO. · PITTSBURGH, PA.

WHEN, IN 1914, we invented and marketed the first Kelvinator, and made electric refrigeration practical for the homes of the world, we knew that our work had been good.

We knew that we had created the first practical electrical cold maker that would preserve foods and make ice . . . of that much we were certain.

But we did not foresee its far-reaching influence upon the life and living of millions of men and women.

We could not know how vastly it was to change the eating habits of a nation . . . how it was to bring into being a new and better-balanced, more healthful diet of *fresh* things every day . . . how it was to save an estimated billion of dollars in America's food and ice bills . . . how it was to bring, and make available to millions of tables, new and varied foods from the gardens of the world.

Nor could we predict the important part scientific food protection was to play in wiping out scourges that had, for years, taken merciless toll . . . how it was to save thousands of lives.

Yes . . . out of the first crude cold-making Kelvinator came a better world, a better race. *We built far better than we knew.*

And Now...Kelvinator Again Makes History with Two Electrifying Announcements!

Proudly Presenting the # SILVER JUBILEE

New! The Cold Chest . . . big enough to hold 14 pounds of meat, and keep it fresh and flavorful for days. Prevents drying out and loss of vitamin-rich juices. Has glass sliding top.

New Location for Thermometer . . . quick, easy-reading . . . you *know* exactly how cold the interior is.

THE POLARSPHERE. A unit so perfect and trouble-free that it is sealed away forever in a ball of steel. Most efficient of all refrigerating units, it normally needs to run only 20% of the time . . . could keep *five* refrigerators safely cold.

HERE THEY COME . . . twelve beautiful Silver Jubilee models, priced from $118 . . . absolutely new from flat top to streamlined pedestal. Complete price coverage . . . with values that stand out head and shoulders against any kind of competition.

You can talk beauty . . . and we leave it to you if the Silver Jubilee models aren't the most eye-appealing refrigerators ever created.

You can talk features . . . and those given above are just the highlights!

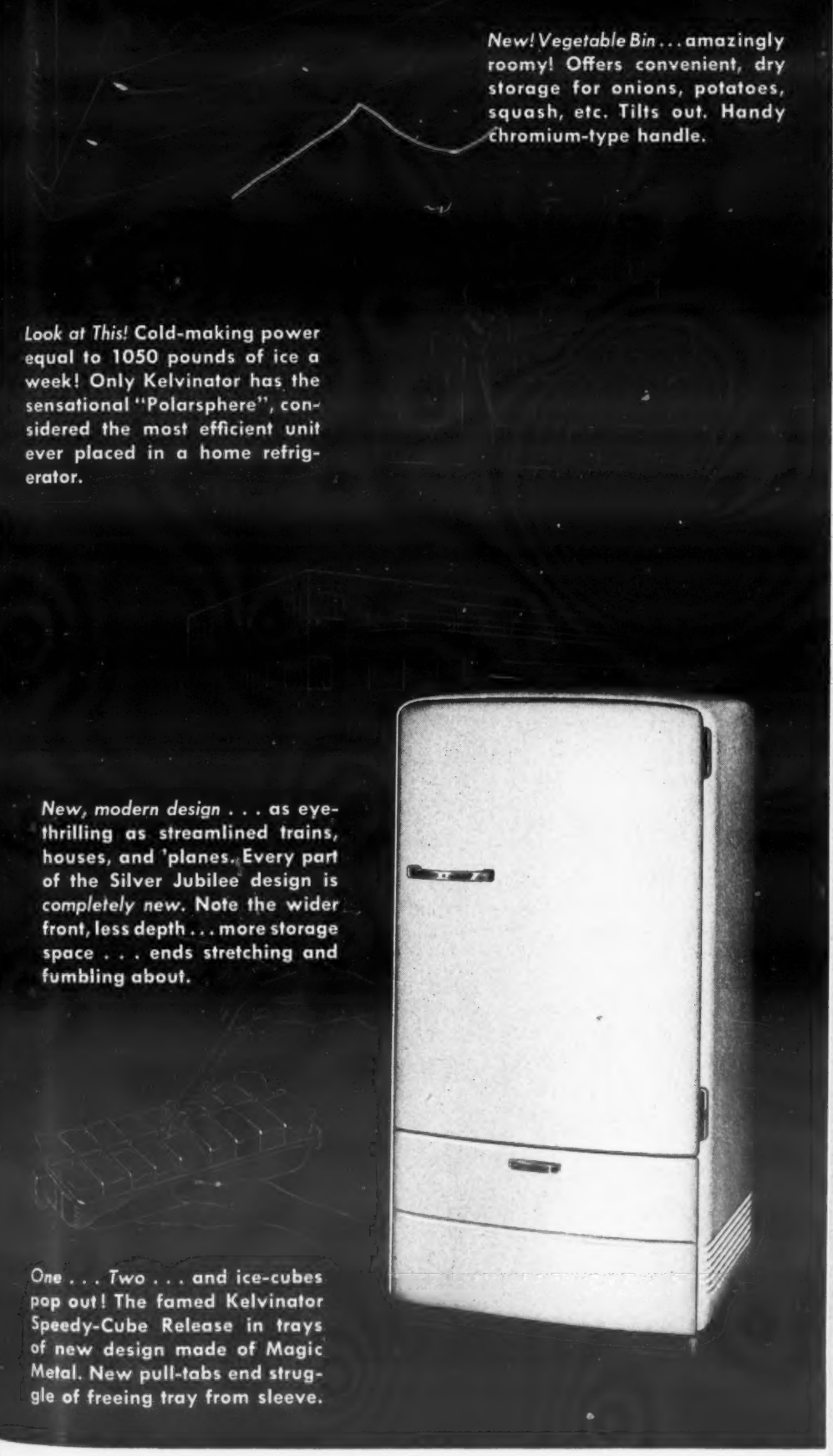
You can talk economy . . . and here's where Kelvinator shines! Get the full story on the new Polarsphere, and see why last year's record-breaking performance is being surpassed for 1939.

Here, in our estimation, is the hottest-selling line that ever graced a salesroom. But don't take our word for it—see your distributor and see for yourself!

KELVINATOR, Division of Nash-Kelvinator Corporation, Detroit, Michigan.

Come in and Join

KELVINATOR



New! Vegetable Bin . . . amazingly roomy! Offers convenient, dry storage for onions, potatoes, squash, etc. Tilts out. Handy chromium-type handle.

Look at This! Cold-making power equal to 1050 pounds of ice a week! Only Kelvinator has the sensational "Polarsphere", considered the most efficient unit ever placed in a home refrigerator.

New, modern design . . . as eye-thrilling as streamlined trains, houses, and 'planes. Every part of the Silver Jubilee design is *completely new*. Note the wider front, less depth . . . more storage space . . . ends stretching and fumbling about.

One . . . Two . . . and ice-cubes pop out! The famed Kelvinator Speedy-Cube Release in trays of new design made of Magic Metal. New pull-tabs end struggle of freeing tray from sleeve.

ANOTHER SILVER JUBILEE ANNOUNCEMENT

Vital to Appliance Dealers and Retail Salesmen

KELVINATOR Starts Celebration of 25th Anniversary with Founding of NATIONAL SALESMEN'S INSTITUTE

● You would expect this announcement from Kelvinator—the originator of the "Sales Mean Jobs" Crusade that swiftly grew into a nation-wide prosperity movement.

George W. Mason, president of Nash-Kelvinator Corporation, believes the greatest need in business today is better salesmanship. Out of this belief now comes the Kelvinator National Salesmen's Institute.

The following statement is made by H. W. Burritt, vice-president in charge of sales of the Kelvinator Division:

"I am privileged to announce the founding of the Kelvinator National Salesmen's Institute, with Sidney Edlund as its president.

"Mr. Edlund has a brilliant record as sales-manager, author, teacher, and co-founder of 'Man Marketing Clinic'. This broad experience makes particularly helpful the opportunity to train under his leadership.

"The Institute will approach the whole subject of retail sales training in an entirely new way! It bids fair to promise an immediate influence on dealer profits as well as increased ability and earning power for the salesmen.

"Dealers will find in the Institute an answer to such problems as securing the best available sales manpower, keeping that manpower happy and increasingly productive, reducing employment turnover, and cutting down sales expense.

"The Institute courses will be open to any dealer handling any Kelvinator appliance—refrigerator, electric range, electric water heater, laundry equipment—and to any retail salesman employed by such a dealer.

"It is not mere chance that Kelvinator is launching the Institute at the beginning of this Silver Jubilee year. Dedicated to the growth and betterment of the appliance industry, the Institute is an *earned* recognition of the part that has been played—and will always be played—by dealers and retail salesmen in this industry."

H. W. Burritt

Vice-President in Charge of Sales, Kelvinator Division.

KELVINATOR'S 25TH BIRTHDAY PARTY

Major Appliances

New Features Highlight '39 Models At One Chicago Show; Displays Scarce At 3 Others

(Concluded from Page 1, Column 3)

space coolers manufactured by the Outboard, Marine & Mfg. Co. of Galesburg, Ill. This firm's electric refrigerators were introduced under the name of Briggs; its space coolers formerly bore the trade name of Johnson.

Designed especially to interest architects, builders, and families whose space requirements are at a premium, the Gale refrigerators shown at the exhibition reverse the 1939 trend by appearing smaller than their cubic content for food storage. They are offered in three sizes (5, 6, and 7 cu. ft.) and two lines, standard and deluxe.

Epitomizing the trend toward massive-appearing, wider and shallower cabinets are the Universal Cooler and Copelands now being shown. Both boxes have as strong points the accessibility of the shallow shelves in the food storage compartment, in addition to mechanical devices for making food removal easier.

At opposite ends of the Stevens exhibition hall are the General Electric and Westinghouse exhibits, each featuring a model all-electric kitchen.

In one of the Westinghouse refrigerators is a real turkey, which, one of the attendants claimed, narrowly misses being pilfered every half hour.

General Electric's talking kitchen is even more showmanlike this year. Each major appliance in the kitchen rests on a turntable. At the rear of each modern appliance is backed up an old-fashioned one, so that at a turn of a switch the modern kitchen turns itself inside out and becomes an old-fashioned one, complete with icebox and drip pan, malleable iron range and galvanized sink—all in appropriate period settings.

As the recorded voice of the "talking kitchen" goes into high gear, the old-fashioned kitchen fades out, the modern all-electric ensemble fades in, and the voice describes each component in turn. Special lighting is thrown on each appliance, while the voice describes it.

Perhaps the most radical refrigerator design shown is that of the Jewett, which has two food compartments and two doors—one above the other, the upper one lifting up, the lower one swinging out in conventional fashion.

Top compartment, which has a capacity of 2 cu. ft., is for the storage of fresh vegetables. Cooling is obtained by conduction. Inasmuch as the air in this compartment does not become humidified by contact with a freezing unit, it operates at higher humidities than does the lower and larger compartment.

The evaporator on this job extends the full width of the cabinet, at the top of the lower food compartment. It operates at a temperature of 15° F. and makes 17 pounds of ice at a freezing.

Powered by a ⅛-hp., two-cylinder, open-type compressor, using 1¼ lbs. of methyl chloride, the Jewett refrigerator has a total food storage capacity of 8 cu. ft., 2 cu. ft. in the upper compartment, 6 cu. ft. in the lower.

Now under the direction of R. I. Petrie, the Speed Queen refrigerator line is offered in two standard models (4 and 6 cu. ft.), two deluxe models (6 and 8 cu. ft.), and two "super deluxe" models (6 and 8 cu. ft.).

The latter two models feature a "twin freezer unit." One freezer is for ice cubes, the other for frozen foods and desserts. Between them is a covered drawer to protect vegetables from dehydration.

Williams Ice-O-Matic is showing a styled line of three refrigerators (4, 6, and 8 cu. ft.) with white bases instead of the customary black. Both single and twin-cylinder open-type compressors are offered, using methyl chloride as the refrigerant.

Heinz & Munschauer Dayton refrigerators are shown in seven sizes, ranging from 4 to 10 cu. ft., plus two "lowboys" of 3 and 4 cu. ft., designed for small apartment use.

Classic lines of the Dayton are in keeping with its wide, shallow cabinet construction. Both open-type and hermetically sealed condensing units are offered.

'Pre-Packing' Considered By Furniture Men

(Concluded from Page 1, Column 4)

exhibit—not a single product on display!!! Instead, Frigidaire's ample space has a welcoming array of comfortable chairs, plus two crackerjack salesmen, F. M. Drake and L. W. Smith.

New President R. I. Petrie presides over the array of Speed Queen refrigerators and washers, talking terms with buyers, and inviting good customers and friends to try the fishing up in his new home country.

Norge has an elaborate display of refrigerators (eight models), washers and ironers, gas and electric ranges. Each product is set off by a modernistic, dramatically lighted background.

General Sales Manager F. E. Basler is in charge of the Gibson exhibit, which includes 12 refrigerators and three ranges. Feature of this exhibit is a 6-cu. ft. box retailing at $99.95.

Most complete representation of refrigerator models is that of Universal Cooler which consists of 16 models all in a long row.

Dayton shows seven models as does Gale (Johnson Motors). Gale also shows a space cooler. Continental's exhibit features a two-temperature job with glass doors to show the condition of food in the two compartments.

Several manufacturers of fabricated metals show modern kitchen designs in the cooperative "Kitchen-Klinic." Norge is represented in this section with an all-electric kitchen and a model home laundry. People's Gas, Light & Coke Co. of Chicago shows an all-gas kitchen which includes an Electrolux refrigerator.

A number of merchandising meetings for furniture men are scheduled for Chicago this week. Foremost from the standpoint of interest is the session of the National Retail Furniture Association which is to be devoted to the subject of "pre-packing."

This idea (pre-packing) is the shipment from factories of merchandise in standardized fiber-board containers approved by retailers, so that the products may be delivered to the consumer without unpacking and repacking by the dealer.

This idea will not only cut distributor costs, its adherents claim, but will increase the attractiveness of the product and protect it from damage incidental to handling.

Big job is to get agreement on standards for such pre-packing. Walter Baumann of the Ludwig-Baumann Co., New York, is chairman of the N.R.F.A. committee which is studying the subject.

In addition to Mr. Baumann, Albert Luhrs of the Container Testing Laboratories, and A. L. Green and W. M. Dietrich of the Association of American Railways will present their views on the subject.

Gerald Stedman, vice president of the Cramer-Krasselt Co., addressed the banquet of the National Wholesale Furniture Salesmen's Association Monday night.

Other speakers were Louis Breuner, president of the N.R.F.A.; and Roscoe Rau, N.R.F.A. executive vice president.

The Unit's Not on the Top, But Look What Is

Here's a preview of the General Electric refrigerator for 1939, even though it may be a bit submerged. The unit was "launched" in a Cleveland swimming pool in what turned out to be a rather attractive production test, what with the mermaid and all.

Everybody Talks To Everybody At Leonard Conventions

(1) Providing just the touch of informality needed to bring distributors and factory men closer together was the first of Leonard's "miniature conventions" to introduce its 1939 refrigerators. Here, in a between-sessions conference are Tom Burke, Boston; General Sales Manager Ray Legg, originator of the small convention idea; Joe Burke, president of J. H. Burke Co., Boston, and Jack Burke.

(2) H. S. Turner, in charge of orders and distribution at the Detroit plant, watches W. H. (Bill) Williamson, Jr., president of Page-Williamson, Charlotte, N. C., himself no slouch at card tricks, take a post-graduate course from Martini, magician who entertained distributors.

(3) George W. Mason, Nash-Kelvinator president; Don Rulo, central states district manager, and George L. Roth, Omaha, Neb. distributor, smilingly discuss prospects for 1939 sales during an afternoon recess period. In the background is G. V. Egan.

(4) Miss Detroit of 1938 turns her charm on W. E. O'Connor and Arthur McGettrick of Southern Wholesalers, Inc., Washington, D. C.

Leonard Executives Point To Indications For Improved Sales

(Concluded from Page 1, Column 2)

far as program is concerned, was held Monday and Tuesday of this week. Third of the series is being held today and tomorrow, with the final meeting taking place Friday and Saturday.

Keynoting the series of conventions is the forcast that 1939 definitely is going to be a good year, both for the electric refrigeration industry and for business in general.

Welcoming distributors to Detroit, H. W. Burritt, vice president in charge of sales, stressed the optimistic outlook for 1939, but warned that because today's conditions are changing rapidly, alertness on the part of the business man is essential, if he is to make the most of opportunities that present themselves.

He urged that distributors forget the disappointments of 1938 and look to the coming year as one of excellent possibilities for increased sales. He pointed out that, although the volume industries had passed through a bad year, Nash-Kelvinator and the Leonard division ended 1938 in a strong position, with adjustments made to take full advantage of 1939's better business picture.

Mr. Burritt then introduced George W. Mason, Nash-Kelvinator president, who said that electric refrigerator dealers could expect a 20 to 25% increase in sales volume during 1939, and called attention to a replacement market estimated as covering 4,000,000 units.

So great is the company's faith in the possibilities of the immediate future that Leonard's program for 1939 has been made the most ambitious in that organization's 58-year history, Mr. Mason declared.

He said that the electric refrigeration business is an outstandingly good business in which to engage.

"This industry," he declared, "is in the hands of good people. It has pursued a good, sound program. Its possibilities are tremendous."

Many definite factors indicative of improving business conditions were cited by Mr. Legg when he took the platform to address distributors and unveil the new refrigerator models they had come to see.

Stock market quotations are up 65% over the levels of last March, he said. As another evidence of improving business, he pointed out that the motor car industry during the first three months of 1939 will produce more than 1,000,000 units.

"From the standpoint of our industry, the worst headache of 1938 was the problem of prior-year merchandise," he said. "It is reported that this type of merchandise is now less than 30% of what it was a year ago. That is a real load off our shoulders."

Mr. Legg then introduced the 1939 Leonard refrigerators, explaining their new features and announcing their new prices, which are said to be lower than those of last year.

He then introduced Don Rulo, district manager in the Chicago area, who gave a graphic demonstration of the effective use of an electric refrigerator's features as tools in making the retail sale.

Mr. Rulo detailed how, and in what order, the functions of each feature should be described, from cabinet finish and exterior hardware to condensing unit and ice trays.

Following a buffet luncheon, the afternoon session convened with Walter Jeffrey, Leonard's new assistant sales manager, telling the story of the huge electric refrigerator replacement market that now exists in the United States, and advising distributors as to how they might tap this market to best advantage.

Brief talks were made by G. V. Egan, assistant secretary and assistant treasurer of Nash-Kelvinator, and J. Nelson Stuart, director of advertising and merchandising for the corporation's household appliance divisions.

Truman Steinko, advertising and sales promotion manager, announced substantial increases in Leonard's advertising and sales promotion appropriations for 1939, and gave a detailed and illustrated explanation of the division's programs for the merchandising of the new refrigerators.

Leonard, he said, has launched the biggest trade paper advertising program in its history. Newspaper advertising also will receive extra emphasis this year, he declared.

First day's convention sessions were closed with a talk by Mr. Legg on "The Distributor's Job—Coverage," and by Mr. Jeffrey on "Tools to Get Coverage."

Banquet and entertainment topped the first day's proceedings, with the second day of each convention given over to individual conferences between distributors and factory officials.

Across the Nation Thousands Acclaim FRIGIDAIRE FOR 1939!

● From city and town, from every corner of the nation, Frigidaire selling men...thousands of them ...are meeting in convention to greet the sensational new Frigidaire for 1939. Up and down the country, Frigidaire's flying convention crews are revealing to anxiously waiting audiences the secret of Frigidaire's confidence for 1939.

In cities from coast to coast, Frigidaire is making an announcement of major importance that bears out Frigidaire's adherence to its basic obligation: that it must not fail to contribute in some real manner to the advancement of the industry, as well as to the advancement of the living standards of the public. In the past, Frigidaire has fostered many such fundamental improvements. Nevertheless, important as these contributions have been, Frigidaire's achievement for 1939 surpasses anything that Frigidaire has ever done before.

In unveiling to dealers everywhere a startling new line of 1939 products – new in fundamental conception–new in design–new in price structure– Frigidaire reaffirms its willingness to shoulder the responsibilities entrusted by leadership. And, coming at a time when leadership is so vitally important, Frigidaire is now proving conclusively that this trust has not been misplaced.

Out of the enthusiasm and acclaim of thousands of men, who this month are viewing the new 1939 line of Frigidaire refrigerators and electric ranges for the first time, has come the firm conviction that again Frigidaire is writing a new chapter in electrical appliance history.

FRIGIDAIRE DIVISION, GENERAL MOTORS SALES CORPORATION, DAYTON, OHIO
ELECTRIC REFRIGERATORS · ELECTRIC RANGES · ELECTRIC WATER HEATERS

IN CONVENTIONS FROM COAST TO COAST THOUSANDS CHEER FRIGIDAIRE!

WANTED!

A Limited Number of Progressive Sales Outlets to Handle any Portion or the Complete Line of General Electric Commercial Refrigeration Equipment.

An Exceptional Opportunity to Increase Your Annual Income. New Plan. Territories Going Fast! Mail the Coupon TODAY for Franchise Details.

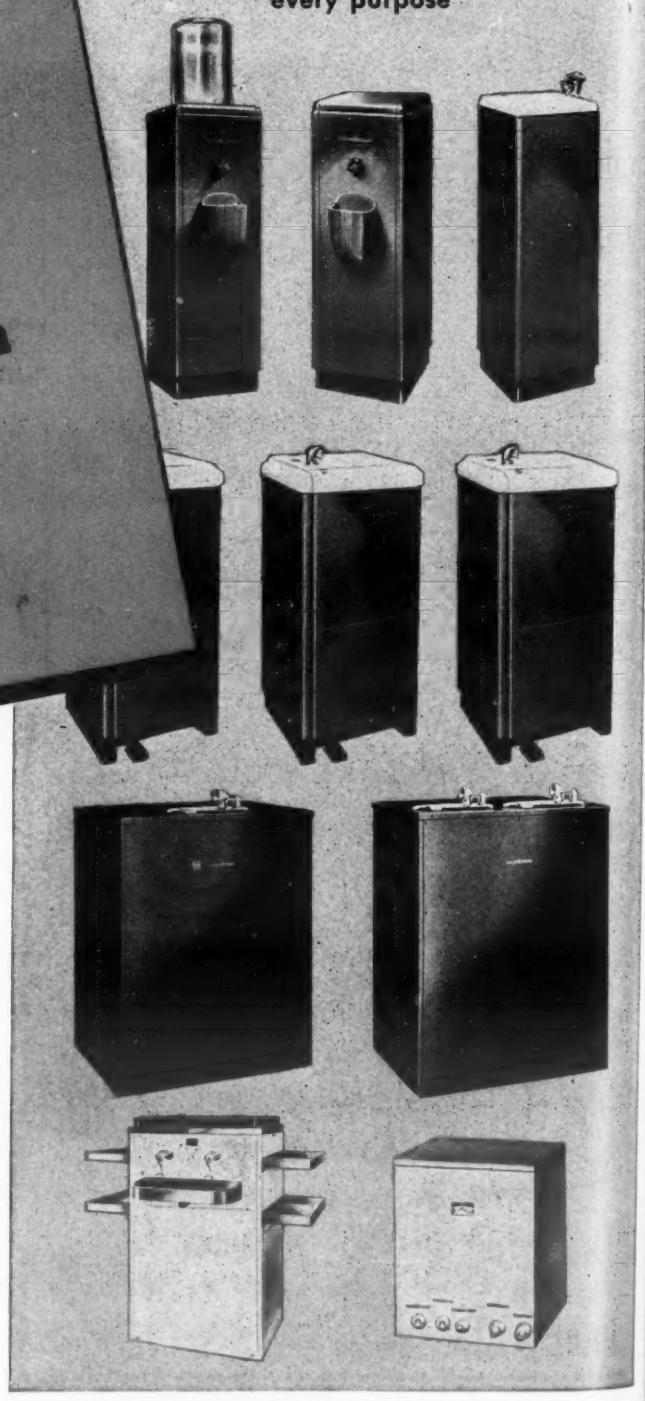
I HEAR G-E's GOING PLACES IN COMMERCIAL REFRIGERATION AND I'M GOING WITH 'EM!

Whether you have never sold a nickel's worth of commercial refrigeration equipment in your life—or whether you are now in the business for all you are worth—*be sure* to get the General Electric proposition for '39! It's going to be a G-E Commercial Refrigeration year!

If you are seeking new avenues of profit, you will find the market for G-E commercial refrigeration products practically unlimited. You have the commanding advantage of handling the industry's *No. 1 line.* It's priced "on the nose," it's 100% complete—no gaps, no divided responsibility, no expensive service worries due to cheaply thrown together merchandise. It's a quality line through and through—with General Electric's enviable reputation for thrifty operation and dependable performance.

THE INDUSTRY'S

WATER COOLERS
for offices, factories, mills, restaurants, every purpose



GO PLACES with General Electric Commercial Refrigeration in '39! The coupon will bring you complete franchise information and details of G-E's New Plan. Fill it out and mail TODAY! General Electric Co., Commercial Refrigeration Section DF1, Nela Park, Cleveland, Ohio.

GO G-E! —ALL THE WAY!

GENERAL ELECTRIC

An Invitation to HOUSEHOLD APPLIANCE DEALERS

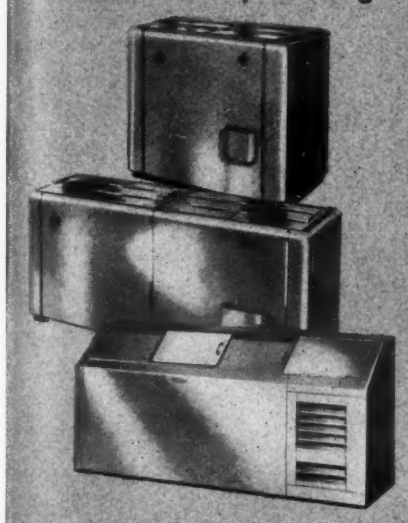
General Electric offers you a quick, easy way to get into the fast-growing commercial refrigeration business with all its profit opportunities! *No experience needed.* On the new General Electric Step-by-Step Plan you can add G-E "Packaged" Commercial Products to your present lines—start as small as you want and grow just as fast and big as you want. Nothing complicated to learn, no installation problems. No burdensome financing necessary. G-E "Packaged" Commercial Refrigeration Products are engineered, assembled and tested at the factory, shipped complete, *ready to plug in.* Send the coupon *today* for franchise details!

An Invitation to COMMERCIAL REFRIGERATION DEALERS

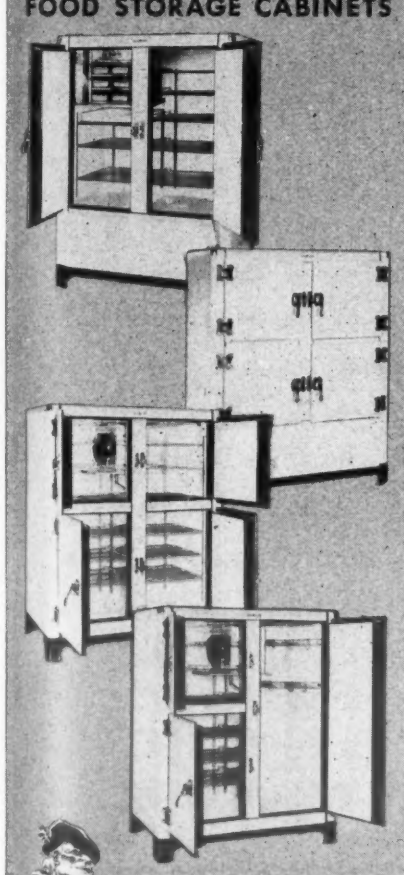
No matter what lines you now handle *it will pay you* to investigate General Electric's franchise before completing your plans for 1939. Find out about the Industry's No. 1 Line of Commercial—complete to the last detail—quality equipment bearing the famous "G-E" monogram, yet that costs no more than the ordinary variety! Find out about General Electric's complete field service that includes expert sales, engineering, installation and servicing support. Find out why it is to your advantage to have the backing of the world's largest manufacturer of electrical apparatus. Mail the coupon NOW for complete information.

#1 LINE OF COMMERCIAL REFRIGERATION EQUIPMENT

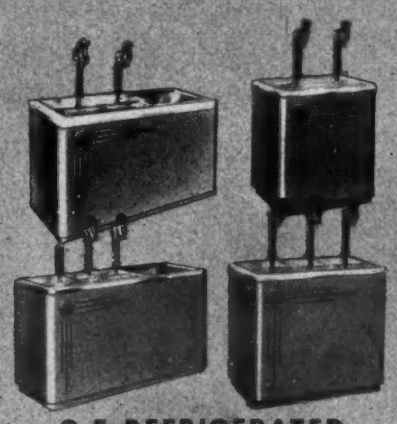
BEVERAGE COOLERS
for wet or dry storage



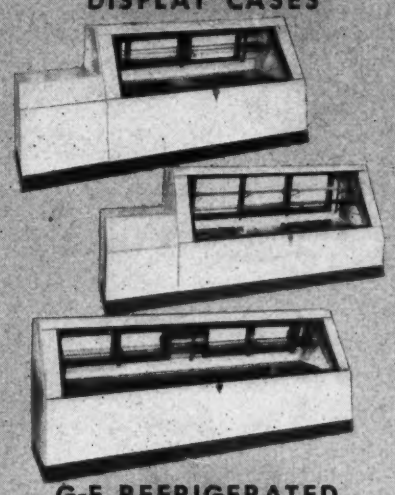
FOOD STORAGE CABINETS



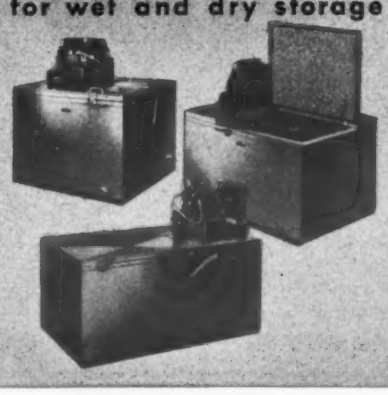
BEER COOLING EQUIPMENT
for every need



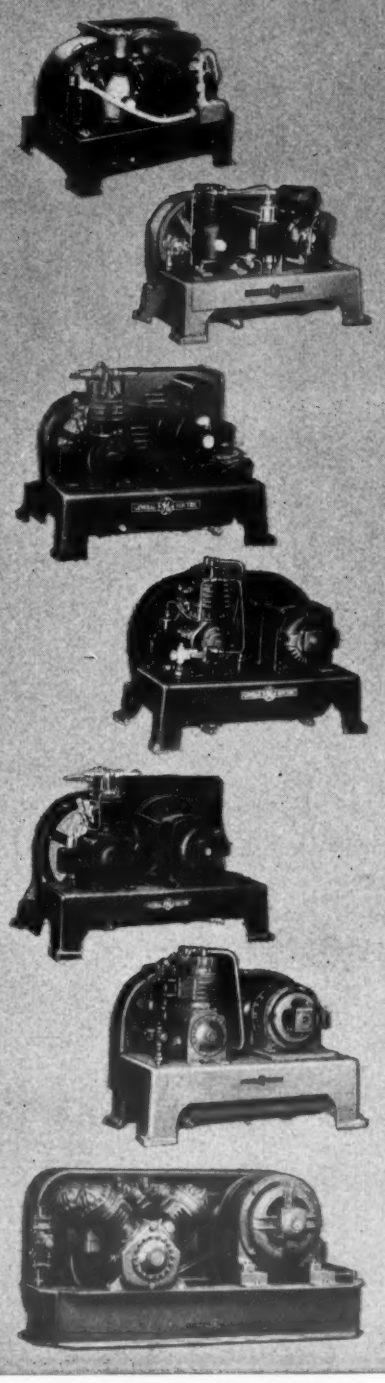
G-E REFRIGERATED DISPLAY CASES



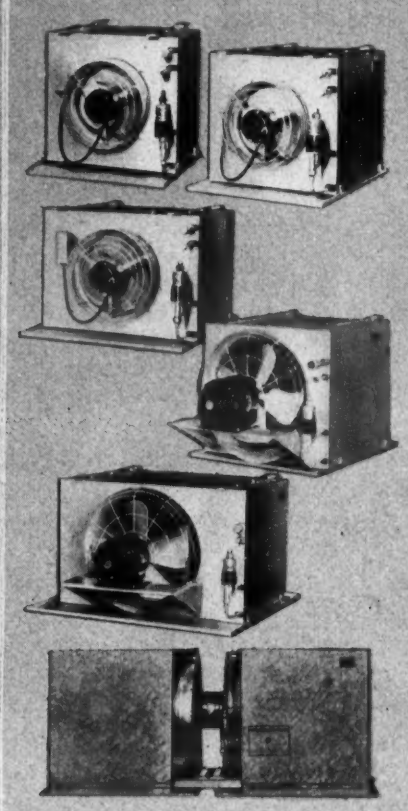
G-E REFRIGERATED MILK COOLERS
for wet and dry storage



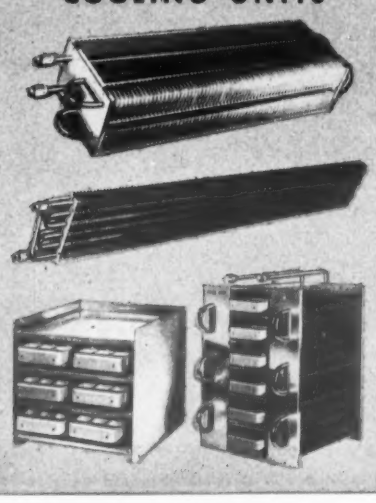
CONDENSING UNITS
¼ to 50 H. P. . . . air-cooled, water cooled . . . all sizes



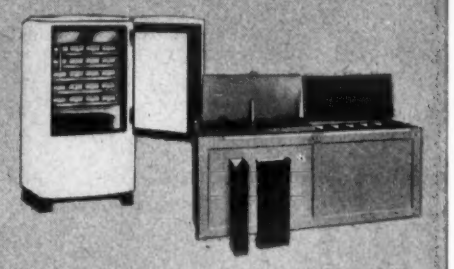
CONDENSED-AIR COOLING UNITS



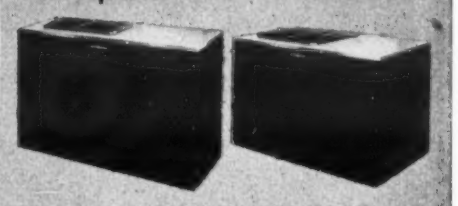
SPINNER FINNED COOLING UNITS



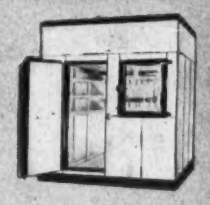
ICE MAKERS
cube and bulk



ICE CREAM CABINETS
complete line . . . all sizes

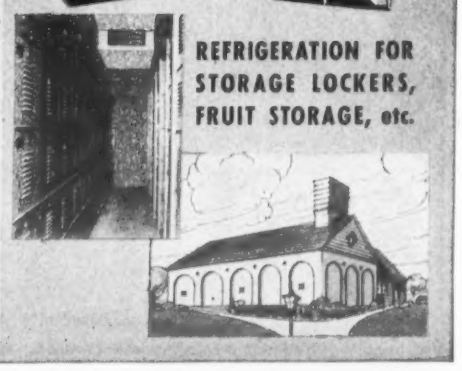


G-E REFRIGERATED WALK-IN COOLERS
for markets, etc.

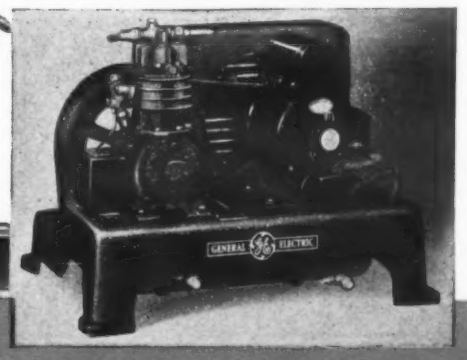


G-E REFRIGERATED CABINETS for bakeries, florists, etc.

REFRIGERATION FOR STORAGE LOCKERS, FRUIT STORAGE, etc.



NOW...New Low Prices on



GENERAL ELECTRIC SCOTCH GIANT CONDENSING UNITS

Rugged • Powerful • Thrifty

GENERAL ELECTRIC

ZIP AND MAIL TODAY!

GENERAL ELECTRIC CO.
Commercial Refrigeration Section DF1, Nela Park, Cleveland, Ohio

Rush complete information and details of your New Plan on the G-E Commercial Refrigeration Franchise Opportunity.

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Air Conditioning

St. Louis Stagehands' Demand of Right To 'Turn on' Systems Halts Theater Cooling Progress

ST. LOUIS — Installation of air-conditioning systems in St. Louis neighborhood moving picture theaters is being held up by the Theatrical Brotherhood's demand that a stagehand be employed to turn the system on and off.

Theater owners are becoming restive over the demands because it would necessitate the employing of a stagehand, whose services would not be necessary during the time when the system is operating. The labor cost would be prohibitive, the theater owners claim, even under the union rule whereby two small theaters would divide the $75-a-week salary of a stagehand to operate the electrical air coolers.

Washed-air systems now in operation would be replaced by mechanically refrigerated air-conditioning units, such as now installed in only two neighborhood St. Louis theaters, but owners are fearful that if they do not hire the unnecessary stagehand the Theatrical Brotherhood would at once call out the union movie operators, who are affiliated with the same organization.

Cooling systems are necessary from May 1 to Oct. 1 in St. Louis. The stagehand stays on the payroll, under the union rule, even during periods of cool weather, when the cooling system is not required, until the summer season closes and the air-conditioning system is shut off for the winter.

Only two neighborhood theaters, the Apollo and the Will Rogers, have mechanical refrigeration systems and operate under the system. Larger theaters employ a stagehand regularly, under union rules.

The stagehand does not perform any maintenance work on the cooling system. Theater owners claim the actual operation is so simple that it does not require a stagehand or any other skilled employe to turn the machine on and off, but the union rules say otherwise.

Albany Air Conditioning Permits Up In '38

ALBANY, N. Y.—Individual air-conditioning permits issued during 1938 in this city were almost twice as many as in 1937, but the total value was less. The 1938 total was 27 individual units at $48,892, as compared with 14 at $59,664 for 1937.

Pleasantaire Makes Changes In Unit

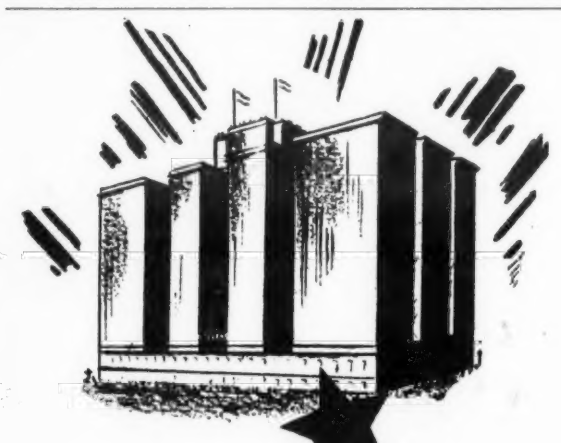
WASHINGTON, D. C.—Announcement of a new, improved Pleasantaire room cooler was made here recently by Richard F. Roper, president of Pleasantaire Corp. Known as the model C, the new unit features increased capacity, quieter operation, and greater ease of servicing.

Refrigerant control will be by means of a thermostatic expansion valve, which will replace the automatic valve previously used. Evaporator and condenser coils have been enlarged and are of new design. Design improvements have made possible an increase of 100 c.f.m. in the condensing air stream, and Mr. Roper asserts that the net cooling capacity has been increased approximately 25% over previous models.

Cabinets for the new units are lined with ½-inch sound and heat insulating material. The front cover plate is hinged at the bottom, providing easy access to all moving parts. The entire refrigeration chassis slides in and out of the cabinet on built-in runners, reducing servicing and installation problems.

Volume production on the new units will begin early in January, as the company plans to have a large stock of units available in advance of early season demands, Mr. Roper said.

Sales plans for 1939 include an increase in the number of dealers and distributors handling the Pleasantaire room cooler line, he continued. New distributor franchises are being signed at the present time.



SPACES . . 70 and 71 . .

1st Annual All-Industry
Refrigeration and Air Conditioning
Exhibition . . . . .
STEVENS HOTEL
JANUARY 16 · 17 18 19

AUTOMATIC PRODUCTS COMPANY
2450 NORTH THIRTY — SECOND STREET
MILWAUKEE WISCONSIN
Export Department, 100 Varick Street, New York City

*Refrigeration Parts Jobbers, Who Recognize Quality . . Stock A-P Valves . . .

DEPENDABLE
THE BYWORD FOR A-P VALVES

Mapping Sales Plans For Newark District

These three men head the firm known as Conditioning Co., Inc., newly-appointed distributor of Carrier Air Conditioning for the city of Newark, N. J. and vicinity. Left to right are John A. Powell, Joseph H. Farnham, and H. E. Wood.

Illinois 'U' Conference Talks Will Center On Practical Problems

URBANA, Ill.—Varied problems of practical interest to persons in the air-conditioning industry will be the subject of papers and discussions at the 1939 conference on air conditioning to be held at the University of Illinois March 8 and 9 under sponsorship of the department of mechanical engineering and the engineering experiment station.

First session, convening at 9:30 a.m. March 8, will be chairmanned by Dean M. L. Enger of the college of engineering, and will be opened by him with an address of welcome.

AIR DISTRIBUTION PROBLEMS

"Equipment for All-Year Air Conditioning" will be discussed by W. H. Severns, professor of mechanical engineering, and P. E. Mohn, assistant professor; and "Characteristics of Duct Systems and Fans" will be covered by S. H. Downs, chief engineer of Clarage Fan Co.

Mr. Downs will chairman the afternoon session, at which papers to be presented include "Introduction and Diffusion of Cold Air in Rooms," by D. W. Nelson, assistant professor of steam and gas engineering of the University of Wisconsin, and "Regulation of Air Temperature and Humidity," by C. L. Ringquist of the Trane Co.

Dr. A. C. Williad, president of the university, will preside at the evening dinner session, at which the chief address will be by Dr. Charles Sheard, director of the Mayo Clinic's division of physics and biophysical research. Topic of Dr. Sheard's talk will be "Physiological Responses of the Body to its Environment."

FIELD ENGINEERS TO SPEAK

Morning session on March 9 will be under the chairmanship of S. I. Rottmayer, mechanical engineer, S. R. Lewis, Chicago, and will include discussions of "The Cooling Load and Refrigeration Problems in Comfort Air Conditioning," by R. E. Gould, assistant manager of air-conditioning engineering for Frigidaire; "Building Insulation, Types and Applications," by S. Konzo, special research assistant professor at the university, and "Condensation Problems in Modern Buildings," by L. V. Teesdale, senior engineer of the U. S. Department of Agriculture Forest Service, Madison, Wis.

Closing session of the conference will be presided over by C. A. Leutwiler, professor of mechanical engineering, and will hear papers on "Air Conditioning Water Supply and Disposal," by W. D. Gerber, engineer of Illinois State Water Survey, and "Conservation of Water by Using Cooling Towers and Evaporative Condensers," by Mr. Rottmayer.

Afternoon sessions on both days will close early enough to permit visitors to inspect air-conditioning equipment installed in the university's research residence, the mechanical engineering laboratory, and the Lincoln Hall theater. There is no registration or tuition fee.

New Dealership Formed

CHICAGO — Kitchen Appliance Corp. has been established at 107 Division St. here by C. D. Kammeyer, C. J. Wolf, and O. L. Thomas.

Chicago Meeting May Complete Organization Of Air Cooling Dealers

(Concluded from Page 1, Column 5)

dent of the Air Conditioning Association of Michigan, will act as temporary chairman at the meeting here. Representatives are expected from air-conditioning groups in Michigan, Illinois, Indiana, New York, Ohio, Texas, and many other states.

OPPOSITION SPURS INTEREST

An unusual amount of interest has developed in the proposed association following opposition to the movement voiced by representatives of the Heating, Piping & Air Conditioning Contractors National Association at a preliminary meeting held in Detroit during December.

At this time Mr. Keller of the Michigan association stated that "a new type of business has come into being during the last 15 years, which is more interested in the sale of air conditioning than in installation problems. We see no reason for anything but harmony between the heating and piping contractors and this new group, for in many instances concerns of our type sell air-conditioning systems and sublet a large portion of the installation work to the heating and piping trades."

Discussions of many problems relating to the sale of air-conditioning equipment are expected at the meeting here. These will include installation and operating codes, matters of fair trade practice, publicity, standards, methods of bidding, exchange of industry statistics and information, and length of equipment guarantee.

LOCAL GROUPS HELP

"Much has been done by the Air Conditioning Association of Michigan to place the industry on a sound and profitable basis in greater Detroit," Mr. Keller asserted.

"We understand that similar work has been carried on in many other cities, and the meeting Jan. 17 will be an initial effort to bring many viewpoints together with the idea of ultimately presenting a united front throughout the country.

"Everything points to the fact that 1939 will be air conditioning's greatest year. For this reason we believe the air-conditioning dealers throughout the country should begin to get a clear understanding of what can be done to put the entire industry on a sound and profitable basis," Mr. Keller said.

With Congress In Session They Need Conditioning

WASHINGTON, D. C. — High-towers, new modern air-conditioned apartment house at 14th and K Sts., was opened for occupancy Jan. 1. An individually controlled year-around unit is installed in every apartment. Kitchens are all-electric. Rentals range from $50 to $89.50.

Triangle Refrigeration Sales Established In Chicago

CHICAGO—Triangle Refrigeration Sales & Repair, Inc., 1402 West Belmont Ave., has been established by D. Cowan, M. G. Smith, and H. R. Collins.

New Type of Craftsman CUTS SERVICE COSTS 2/3

ELECTROLUX GAS REFRIGERATORS—STOVES, WATER HEATERS—BUTANE CARBURATION PROPANE AND BUTANE SUPPLIES

SASIA & WALLACE
OLIVER FARM EQUIPMENT
Bakersfield, Calif.

419 19th Street Phone 1654

November 30, 1938

Refrigeration and Air Conditioning Institute
2150 Lawrence Avenue
Chicago, Ill.

Mr.R. O. Devereux: Student Placement Manager

Dear Sir:

The letter you wrote some time ago concerning one of our employees, Mr. Philip M. Ashworth, has been referred to me.

I am pleased to be able to state that Mr. Ashworth has been an entirely satisfactory employee in every way. He began working here in November of last year. At that time the only service work we were doing was on boxes that we had ourselves sold, and there was not enough of the work to justify a full time man over the winter months. However, Mr. Ashworth also kept the books of the firm and assisted with the floor selling.

In June of this year, we made arrangements with O'Keefe & Merritt Co. of Los Angeles to handle all of their service on guaranteed boxes in the southern San Joaquin valley. Mr. Ashworth was sent to the factory for special training for a short period, and on his return took over the service work.

We are more than pleased with the manner in which Mr. Ashworth has handled this work over the summer. He has maintained service on probably several thousand refrigerators, beer coolers, ice cream makers, etc., without assistance, over the hot summer months here when the temperature was often up around 120 degrees.

O'Keefe & Merritt have informed us that their service cost for the summer in this territory has been less than one-third previous years, when they sent up servicemen direct from the factory for service work here, despite the fact that there were 200 new beer coolers and 300 new refrigerators sold here this year, all of which speaks well of Mr. Ashworth's efforts here.

Page 2

Mr. Ashworth has a neat appearance and a pleasing personality, which we feel sure have been of very definite value to this company in preserving and extending the good will of our customers toward us.

He appears to have a very thorough knowledge of refrigeration in all its applications, and while I do not know a great deal about it myself, I do know that from the very small number of call-backs and from the remarks of gratified customers, he has been doing a good job. He made several commercial installations during the year, and in every case is the customer completely satisfied.

In short, we are more than pleased with the work Mr. Ashworth has been doing here, and if you are responsible for the excellent training he has received, please accept our congratulations for doing a splendid Job.

Yours very truly
SASIA & WALLACE
C. E. Elwood
Service Mgr.

Read

What Sasia & Wallace say about the qualifications of this New Type of Craftsman.

"TRAINED AS THE INDUSTRY WANTS THEM TRAINED"

Yes, Sasia & Wallace—like many other distributors, dealers and contractors throughout the country—have found R.A.C.I. graduates the answer to their sales, installation and service problems—in both Refrigeration and Air Conditioning.

This New Type of Craftsman has been created especially to suit your requirements. He knows every phase of heating, ventilating and cooling from the installation, servicing and operating angle—the theoretical as well as the practical side.

All R.A.C.I. graduates now have 1000 hours of home study, plus four weeks of intensive shop work in our new and modern laboratories in Chicago—where, working on equipment valued at more than $125,000, they have had to install, dismantle, rebuild and service ALL TYPES of conventional Air Conditioning and Refrigeration equipment.

Let us send you the records of a few of our graduates in your neighborhood.

TRAINING IS ENDORSED BY MORE THAN 100 MANUFACTURERS, AND IS SUPERVISED BY A MANUFACTURER-APPOINTED COMMITTEE OF ENGINEERS AND EXECUTIVES.

ATTEND THE 1939 ALL INDUSTRY EXHIBITION
at the Stevens Hotel in Chicago, January 16 to 19
We especially invite you to visit our exhibit in Booths 18, 19 and 20.

Refrigeration & Air Conditioning Institute

2130-2158 LAWRENCE AVENUE • CHICAGO, ILLINOIS

6-Year Cumulative Record of Electric Refrigerator World Sales, Exports, Retirements and Market Saturation

Estimated by Air Conditioning & Refrigeration News

	World Sales	— Exports	= Sales In U.S.	— Retirements	— Distributor & Dealer Stocks	= Total In Use In U.S.	÷ Wired Homes*	= Market Saturation
Dec. 31, 1933	5,885,000	356,000	5,529,000	800,000	75,000	4,654,000	19,844,000	23.4%
During 1934	1,390,000	107,000	1,283,000	63,000				
Dec. 31, 1934	7,275,000	463,000	6,812,000	863,000	125,000	5,824,000	20,694,000	28.1%
During 1935	1,688,000	120,000	1,568,000	114,000				
Dec. 31, 1935	8,963,000	583,000	8,380,000	977,000	125,000	7,278,000	21,204,000	34.3%
During 1936	2,180,000	184,000	1,996,000	225,000				
Dec. 31, 1936	11,143,000	767,000	10,376,000	1,202,000	200,000	8,974,000	21,888,000	41.0%
During 1937	2,500,000	190,000	2,310,000	358,000				
Dec. 31, 1937	13,643,000	957,000	12,686,000	1,560,000	300,000	10,826,000	22,800,000	47.5%
During 1938	1,410,000	170,000	1,240,000	140,000				
Dec. 31, 1938	15,053,000	1,127,000	13,926,000	1,700,000	125,000	12,101,000	23,420,000	51.7%

*Wired home figures furnished by *Electrical Merchandising.*

Household Electric Refrigerator Sales

Estimated World Sales by All U. S. Manufacturers by Years

Year	No. of Units	Average Retail Price	Retail Value
Up to 1920	10,000	$600	$ 6,000,000
1921	5,000	550	2,750,000
1922	12,000	525	6,300,000
1923	18,000	475	8,550,000
1924	30,000	450	13,500,000
1925	75,000	425	31,875,000
1926	210,000	390	81,900,000
1927	390,000	350	136,500,000
1928	560,000	334	187,040,000
1929	840,000	292	245,280,000
1930	850,000	275	233,750,000
1931	965,000	258	248,970,000
1932	840,000	195	163,800,000
1933	1,080,000	170	183,600,000
1934	1,390,000	172	239,080,000
1935	1,688,000	166	280,208,000
1936	2,180,000	164	357,520,000
1937	2,500,000	171	427,500,000
1938	1,410,000	172	282,520,000

Statistics

(Concluded from Page 1, Column 3)

all junked and discarded installations (and deducting for unsold stocks still in the hands of dealers) we have a total of **12 million** household units still in use in the U. S.

This is still a little over one-half of the number of wired homes, so the apparent market saturation has just passed the **50 per cent** mark.

At first thought, it might easily be assumed that the future market for new units will be limited to the very-low-income homes, and that only the smallest and cheapest models can be sold, and that such sales will be in a declining volume.

It will be recalled that many people made the same mistake years ago in estimating the future of the automobile industry. True it is that electric refrigerators do not wear out so fast, or get smashed up like automobiles. Also, the manufacturers have not succeeded in making **style** such a driving force in the kitchen as it is on the street.

But the fact remains that refrigerators do finally wear out (after many years). More important, a very large percentage of the boxes originally purchased are now found to be entirely **too small** to serve their purpose properly. The sales figures for the past four years show very definitely the upward trend in the average size (cubic foot capacity) of the units sold.

Another factor which is just beginning to be felt, and which is destined to become a potent sales appeal for new-style units, is the rapidly spreading use of quick-frozen foods. The household refrigerator of the future simply must be **larger.**

But even without these forecasts of future trends in style or use, there is ample ground for optimism in the cold figures alone. For example, the cumulative total sales of electric refrigerators up to the end of 1928 added up to **1⅓ million.** If anywhere near a **million** of those old-timers are still in use, that many owners should be ripe for the replacement salesman now.

During the next five-year period (1929-33) the total sales amounted to **4½ million** units. Most of those are old style, too small, and many were built when the low-price, cheap-construction mania was at its height.

During the five-year period just past the total sales were over **9 million.** Thus it is apparent that the replacement market alone, represented by units which are over 10 years old, should average close to **a million units per year for the next 10 years.**

Revise those figures if you wish, and then do some calculating on the **new-home** market, plus the **farm** market. It is the latter which is now intriguing the interest of the tractor and implement companies and others who feel that the farm market is their special domain.

Household Refrigerator Sales By States

(This Tabulation Includes Only the Sales Reported by Manufacturers in the Nema Group. Totals for 1938 have not yet been reported)

	1932	1933	1934	1935	1936	1937
Alabama	3,990	7,827	14,283	22,320	21,348	24,047
Arizona	1,228	1,935	3,526	5,373	5,674	7,628
Arkansas	2,502	4,440	7,885	9,420	10,835	11,903
California	29,506	40,301	58,476	114,923	153,608	148,271
Colorado	4,580	6,934	8,969	11,416	14,002	14,239
Connecticut	12,938	14,216	15,851	22,536	32,049	41,482
Delaware	1,622	1,873	2,599	3,150	3,607	4,991
Dist. of Columbia	*	*	10,813	11,262	17,856	18,744
Florida	5,719	8,458	14,293	26,007	28,341	29,616
Georgia	5,735	10,662	24,777	27,034	31,006	35,741
Idaho	1,270	1,847	3,756	6,676	8,743	8,949
Illinois	46,059	57,943	91,545	107,672	188,631	171,464
Indiana	11,082	18,266	29,981	36,844	53,305	61,766
Iowa	7,452	11,209	17,414	23,217	27,559	32,712
Kansas	5,986	9,716	18,862	18,343	22,008	23,410
Kentucky	6,502	11,740	16,737	16,958	25,220	28,883
Louisiana	3,586	6,070	8,442	14,260	18,754	21,606
Maine	4,053	4,480	5,942	7,247	6,793	8,486
Maryland	33,948	30,918	21,732	20,794	21,189	27,744
Massachusetts	27,436	41,147	44,151	60,943	74,191	92,441
Michigan	20,513	26,162	45,636	63,644	97,078	116,763
Minnesota	11,136	11,951	15,087	20,854	26,674	40,025
Mississippi	1,463	2,660	4,372	6,728	10,364	10,794
Missouri	20,796	31,612	45,319	43,944	59,068	60,422
Montana	1,310	2,821	4,433	5,983	8,378	8,198
Nebraska	4,812	6,824	12,186	15,877	16,577	16,410
Nevada	667	996	1,102	1,834	2,484	2,606
New Hampshire	2,326	3,068	4,122	5,284	6,021	6,557
New Jersey	33,948	40,134	50,513	64,013	81,798	90,242
New Mexico	705	1,406	2,163	3,129	3,601	4,441
New York	148,299	163,004	160,539	178,659	222,327	263,887
North Carolina	5,184	12,081	17,584	24,306	34,226	44,298
North Dakota	1,196	1,499	2,715	3,825	3,096	4,048
Ohio	30,755	55,434	76,979	90,331	124,616	159,007
Oklahoma	6,714	10,099	15,170	16,279	18,936	21,504
Oregon	3,928	5,992	13,152	14,090	20,649	16,671
Pennsylvania	55,809	82,864	108,802	117,982	172,092	210,397
Rhode Island	5,752	7,290	6,756	7,459	9,618	12,351
South Carolina	2,555	5,270	8,434	12,385	16,684	20,971
South Dakota	1,033	2,026	3,665	4,878	4,780	4,588
Tennessee	5,810	7,827	22,861	23,804	29,136	33,762
Texas	16,131	29,954	45,764	60,350	75,610	87,649
Utah	2,388	3,556	5,057	6,932	10,890	11,595
Vermont	1,751	2,063	2,609	3,233	4,172	5,680
Virginia	10,517	14,565	19,244	21,478	29,441	33,963
Washington	4,339	6,631	15,527	21,217	31,348	31,004
West Virginia	6,633	11,778	15,381	15,081	22,768	25,534
Wisconsin	8,120	10,873	16,525	24,506	32,267	48,280
Wyoming	549	1,128	1,970	2,300	2,959	2,965
Total U. S.	659,651	908,488	1,157,890	1,446,790	1,892,378	2,203,335

*See Maryland

WATCH KELVINATOR COMMERCIAL *From the Inside—*

That's Where the Profits Are!

"Inside" information. A healthy slice of profits. Where do you get them—both? Well, hardly from a position on the sidelines. Which is why "Watch Kelvinator from the Inside" means going places. And also means *you*.

This message is as timely for *Commercial Equipment* distributors as the dinner-gong to a hungry man. For Kelvinator is now rounding out 25 years of service and cooperation with the distributor.

No hollow shell, this Silver Jubilee celebration. It's a *pledge*. A pledge to keep going fast and strong and to help *you* do the same. Every lick of engineering effort, of testing, manufacturing and selling "know-how" that's welded into the structure of those 25 years is not only still there but *stands* there as a promise for the *next* quarter of a century.

For that's what a good name—an accepted name—entails. Live up to it! Yes, and live beyond it. The grand total of all types of equipment built by Kelvinator since 1914 runs into millions of dollars—products sold at a profit by the "family" of Kelvinator distributors. That pace and efficiency will be maintained—unrelaxed and unswerving—as long as the name itself means anything at all.

This record is yours to team up with. *Not* to be high-pressured into accepting. For the corner-stone of Kelvinator policy is to help the distributor sell rather than to over-urge him to buy. And you can write that down in *figures* instead of words by checking up on the Kelvinator Sales Production Line Plan which is swelling sales for distributors everywhere.

The complete line of equipment listed below opens up to you widely diversified markets . . . for any season, or all seasons, of the year.

Further "inside" information for your name on the coupon.

KELVINATOR SILVER ANNIVERSARY 1914 1939

Kelvinator

Kelvinator commercial products include: Room Coolers and Store Air Conditioners, Central System air conditioning equipment—Automatic Heating equipment for oil, gas or coal—Commercial Refrigeration equipment—Water Coolers—Beverage Coolers—Ice Cream Cabinets

KELVINATOR, Division of Nash-Kelvinator Corporation, Dept. K-15 • Detroit, Michigan

Gentlemen: Please send me your Franchise Book on opportunities with:

☐ KELVINATOR COMMERCIAL EQUIPMENT
☐ AIR CONDITIONING

*Name*_____

*Firm Name*_____

*Street Address*_____

*City*_____ *State*_____

★

Specialty Selling Methods

Dealer New To Business Finds 'Cut-Rate' Price Appeal Doesn't Work In Small Town

ANGOLA, Ind.—You can take it from Mielke & Son here that the small-town refrigerator dealer who thinks he can use cut-price advertising as a substitute for pavement-pounding is in for some mighty lonely, unprofitable days.

Price is definitely not the leading factor in refrigerator and appliance sales in the small town, this dealership has found through rather hard-won experience. People just aren't interested in products of this kind until they are convinced that they need them.

So you can just waste all the cash you want, advertising refrigerators at special discounts or cut-rate prices—you won't get a rise out of the small-town customer. Chances are he won't even read the advertisement.

Mielke & Son, long-time processor and distributor of ice cream products, added a line of refrigerators and other major appliances this year to provide an all-year business. Widely known in the county, the store figured that it could corral its shade of sales easily.

Ample appliance stocks were purchased, displayed attractively. But no prospect came in and asked to buy any of the units. Next the store tried advertising in both local weeklies, and still customers didn't come in to buy.

Then, out for a "quick sale" on several large models which had been on the floor for some time, the company ran a large-size advertisement, offering a liberal discount. Savings offered were very worth-while, but not a prospect came in to avail himself of them.

Finally the store began a systematic canvass among potential buyers. Two of the largest refrigerators were sold quickly—and at the full retail price. Apparently the buyers, who could have been sold before, hadn't even read the cut-price advertisements, for they said nothing about a discount.

This convinced the dealership of two things:

1. Display advertising for institutional and goodwill building purposes is all right—but it won't effect quick sales at cut prices in the small community. For quick sales, use the classified columns.

2. There's just one way to get your share of small-town refrigerator business—call on prospects and convince them they need refrigeration.

Putting Some Spice Into a Radio Cooking School

Losing not for a moment its primary object of cooking instruction and the promotion of major appliances, the air show which has been sponsored by James & Co., St. Louis appliance distributorship, also offers some fine entertainment. Miss Ann Walsh (center, in front of "mike") conducts the half-hour broadcast. The trio at the left sings while Miss Walsh's colored helper beats the eggs and shuffles her feet in time to the music that is played during the program. The broadcasting station auditorium was thrown open to the many housewives who wanted to see, as well as hear, the demonstration. The program also has guest artists and such features as "Children's Day" and entertainment by members of women's clubs.

• • •

Combined Cooking School & Variety Show On Air Is 'Sugar Coated' Promotion

ST. LOUIS—When the St. Louis Star-Times opened the new radio station KXOK, James & Co., General Electric distributor here, decided to take a flyer into radio promotion and offered the facilities of its auditorium and G-E kitchen for a daily "modern kitchen" program.

Soon this program developed into one of the distributorship's major activities. Miss Ann Walsh, who conducts the half-hour broadcast, has marshalled around her a "variety show" type of program which, while it offers abundant entertainment, never loses sight of its primary object of cooking instruction and the promotion of kitchen equipment.

Guest artists, novelty bands, and special features such as "Children's Day" play a big part in the schedule. One of the first guest artists was Miss Vera Cernich, home economist for James & Co. Another program featured members of a public school mother's club playing on instruments fashioned from skillets, etc.

Saturday is Children's Day, so cry-baby cookies and other recipes appealing to the younger generation are featured. Youngsters are encouraged to recite verses over the air and to participate in the program in other ways. Another feature is the "Mail Bag," in which letters are drawn at random from the daily mail and excerpts are read over the air. Many of these turn out to be testimonials for appliances.

Among the "regulars" on the program are Miss Walsh's Negro helper, Ruby, who beats eggs and shuffles her feet in time to the tunes of the "Three Little Girls in Blue" who supply the program's music.

James & Co. advertises that the automatic features of the G-E range used in these programs allow Miss Walsh to spend most of her time at the microphone. When dealers hold listening-in parties and duplicate the program meal on their own range, their activity is mentioned in the broadcast. Many times the company's auditorium is filled to overflowing with people who want to watch this program as well as listen to it.

Oregon Utility Develops a Meter To Show How Much Hot Water a Customer Uses

SALEM, Ore.—To answer effectively complaints of water heater users who think their electric bills are too high, Portland General Electric Co. has developed and put into service in this territory a recording water meter which shows the customer how much hot water he uses, and when he uses it.

The meter makes a continuous record of water consumption of 15-minute periods. This, together with electric meter readings at the beginning and end of the test, gives the customer evidence which he can compare and understand.

It consists of a printometer and printometer clock mounted on a board, and a water meter over which is mounted a contact device. Shaft of the contact extends through the lower bearing and carries an arm, which is driven by the 1-foot hand of the water meter.

With the equipment operating and the device making 24 contacts per revolution of the 1-foot hand, difference between the numbers printed on the tape each 15 minutes represents so many twenty-fourths of a cubic foot.

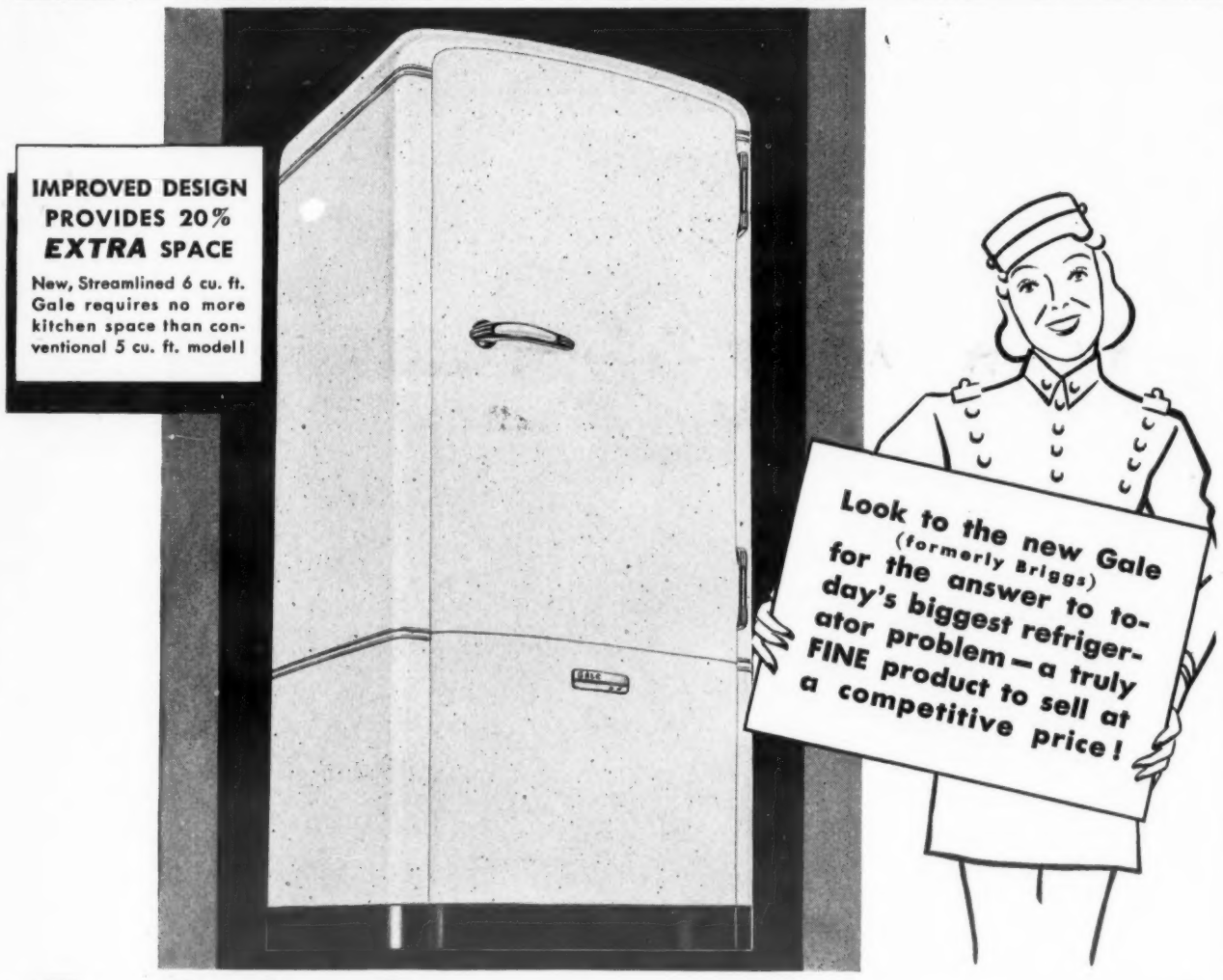
Installation is made by means of a rubber hose on the cold water side of the water heater. Electrical connection for operating printometer equipment is effected by plugging into a 120-volt source. A 15-ampere fuse in a weatherproof socket is included in the extension cord. Upon installation, water meter is grounded to a pipe.

Installation requires about one and a half hours, and a 10-minute interruption of water supply. Length of test is usually one to two weeks.

'Trial Unit' Is Sent To Prospective Hostess

ST. FRANCIS, Kan.—Sending electric refrigerators on a three-day trial to prospective customers who are to entertain at a party or club meeting has proven to be an effective means of stimulating sales, reports Roy Danielson, appliance and hardware dealer.

Whenever he learns through the society news or incidental "visiting" in the store that a prospective customer is to entertain, Mr. Danielson offers an approval refrigerator, which he installs in advance of the affair so that the hostess will have an opportunity to learn about it.


IMPROVED DESIGN PROVIDES 20% EXTRA SPACE
New, Streamlined 6 cu. ft. Gale requires no more kitchen space than conventional 5 cu. ft. model!
Look to the new Gale (formerly Briggs) for the answer to today's biggest refrigerator problem—a truly FINE product to sell at a competitive price!

GALE PRODUCTS

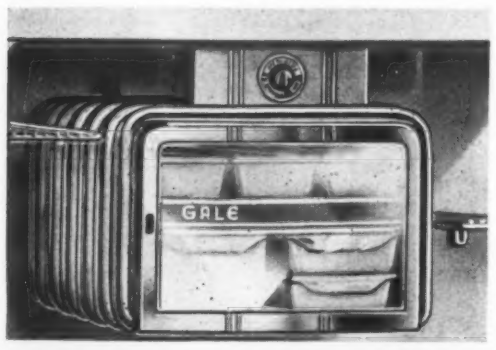
OUTBOARD, Marine & Manufacturing Company—builders of Johnson Sea-Horses, Evinrude and Elto Outboard Motors, Iron Horse Generators, announce a *separate* division for Gale Electric Refrigerators (formerly Briggs) and Gale Space Coolers (formerly Johnson).

Increased plant facilities and personnel, necessary to meet the growing demand for these quality appliances, have been provided at Galesburg.

The development of this Division is another step in the parent Company's long range program to make GALE PRODUCTS a great factor in refrigeration.

UNUSUAL DEALER OPPORTUNITY

Seven years successful operation in refrigeration have proved the soundness of the Company's policy of building *high grade* products and marketing them through channels that permit *moderate* resale prices, with *big volume* for dealers. Write for full details. Dealer territories open.



FEATURING A GREAT NEW DEVELOPMENT

GALE PRODUCTS presents an entirely new line for '39. New beauty throughout! New "streamlined" design for *extra* capacity! And featuring the new Sealed Evaporator! This remarkable development (exclusive with Gale) seals the ice compartment from food odors, makes for utmost sanitation, prevents sticking of trays, induces freer circulation with proper food temperature, while *preserving lower temperature* within the freezing compartment. This lower temperature is so effectively maintained that ice does not melt away when coils are defrosted!.. Porcelain enamel housing, with glass door and chromium trim have great eye appeal, while actual demonstration has powerful sales appeal!

GALE PRODUCTS, 600 MONMOUTH BLVD., GALESBURG, ILLINOIS

Commercial Refrigeration

Distribution Growth On Frozen Foods In Milwaukee Reported

MILWAUKEE — Sale of frozen foods over grocers' counters in this area increased tremendously during the past year, states E. R. Godfrey, owner of E. R. Godfrey & Sons, local food distributor.

Since he became distributor for Birds Eye frosted foods early in the year, Mr. Godfrey has established a retail outlet chain of more than 60 grocers in metropolitan Milwauke, and others in his territory further out in the state.

By next spring, Mr. Godfrey predicts, the number of grocers handling frozen foods through his distributorship will have been doubled.

One of the principal problems confronting the distributor and retailer of frozen foods today, Mr. Godfrey finds, is that of educating the housewives to the fact that frosted foods actually are fresh foods. In this way, natural sales resistance will be broken down, and general public acceptance will follow.

In Wisconsin, the Birdseye division of General Foods Corp. rents the Birds Eye refrigerated display cases to the grocers at a rate of $10 a month. Service is guaranteed for the life of the case, and after the grocer has paid his monthly rent regularly for 36 months, the charge is discontinued.

To foster greater enthusiasm on the part of the retailers, the Birds Eye organization is offering prizes of $25 to grocers who surpass their quota in any one month.

Super-Cold To Introduce New Vegetable Case

LOS ANGELES — New vegetable case and a new line of soda fountains soon will be introduced by Super-Cold Corp., company executives announce. Vegetable case, of porcelain and stainless steel, has undergone laboratory and field tests. List price of the case will be $695.

Soda fountains will be made in five sizes entirely covered with stainless steel, complete with counters in an assortment of styles.

Flower Storage System Keeps Humidity High

BIRMINGHAM, Ala.—The refrigeration system installed in the flower storage room of the local wholesale branch of Oscar G. Carlstedt Co., Louisville, Ky. florist firm, maintains a temperature of 42° F. and, while providing no direct control of humidity, has oversized coils which make it possible for the system to run at lower speeds, thus absorbing less of the moisture in the room.

Refrigeration for this 20 x 10 x 8-ft. storeroom is provided by means of a 1½-hp. air-cooled Freon compressor. Equipment includes the new style York fin coils and Fedders drip baffles. Side walls and ceiling are insulated by 4 inches of Armstrong corkboard.

Installation was made by Gulf-York Co., distributor for York Ice Machinery Corp.

Ed. Watson Goes to Atlanta Office of Worthington

ATLANTA—Edward Watson, refrigeration and air-conditioning engineer of Worthington Pump & Machinery Corp., has been transferred from the company's home office at Harrison, N. J. to its Atlanta district sales office. His operations in this new position will cover Florida, Alabama, and the Carolinas, as well as Georgia.

Longtime Canadian representative of Carbondale Machine Co., Mr. Watson joined the Worthington organization when that corporation absorbed the Carbondale company in 1934. During 1936 and 1937 he was located in South Africa, where he engaged in promotion of Worthington-Carbondale equipment in conjunction with the Worthington representative there. Since his return, he has been in charge of the company's industrial refrigeration division.

A-B Opens New Office

ROCKFORD, Ill. — Allen-Bradley Co., manufacturer of controls, has opened a sales office at 101 Broadway here. H. L. O'Donnell, formerly of the Chicago office of the company, has been placed in charge.

Proper Temperatures For Chilling and Holding Meats Explained By Authority

Carlos R. Rossi
Calle Dr. Jose C. Barbosa No. 7
San Juan, Puerto Rico

Editor:

I would like to receive some information regarding the best way to keep both frozen and fresh meats, as follows:

Frozen meats: We import here in Puerto Rico a large quantity of frozen meats from the United States. The steamship company here advises me that their refrigerating rooms when the meat is received at New York are at a temperature of 30° F. and when the meat arrives in Puerto Rico the rooms are at a temperature of 18 to 20° F. These meats are kept here in storage from say, one to four or six weeks. I believe that they are seldom kept longer than this time.

I would like to know what would be the best economical temperature to keep these frozen meats here. Naturally, we understand that the temperature should be below freezing, but I am inclined to believe that 25 to 30° F. would be satisfactory. Your recommendations will be very much appreciated.

Fresh meats: We also have, although in small quantities, fresh meats here and I understand that the procedure regarding these meats should be as follows:

When they come from the slaughterhouse they should be put in a precooler at about 50° and then put in the cooler at a temperature of 34 to 36°. However, this is not possible in most cases here and perhaps the procedure would be to hang the meat where there is an air current and after a number of hours place same in a cooler at 34 to 36°.

I would like to have your complete advices and recommendations in connection with those points.

CARLOS R. ROSSI

Answer: We referred your inquiry to the Institute of American Meat Packers, and received the following reply from the director of the Institute's Department of Packinghouse Practice and Research:

"Freezers for handling frozen product in storage are usually held at a maximum of 15° F. I would think that 25 to 30° would be a little bit high. Product close to the floor or walls might defrost slightly because temperatures at these points are sometimes higher than the temperature in the center of the freezer due to inefficient insulation.

"In any event, if the higher temperatures are used, there should be an air space between the product and the walls and between the product and the floors. This is usually accomplished by placing the product in bins with slatted racks for the sides and for the floor.

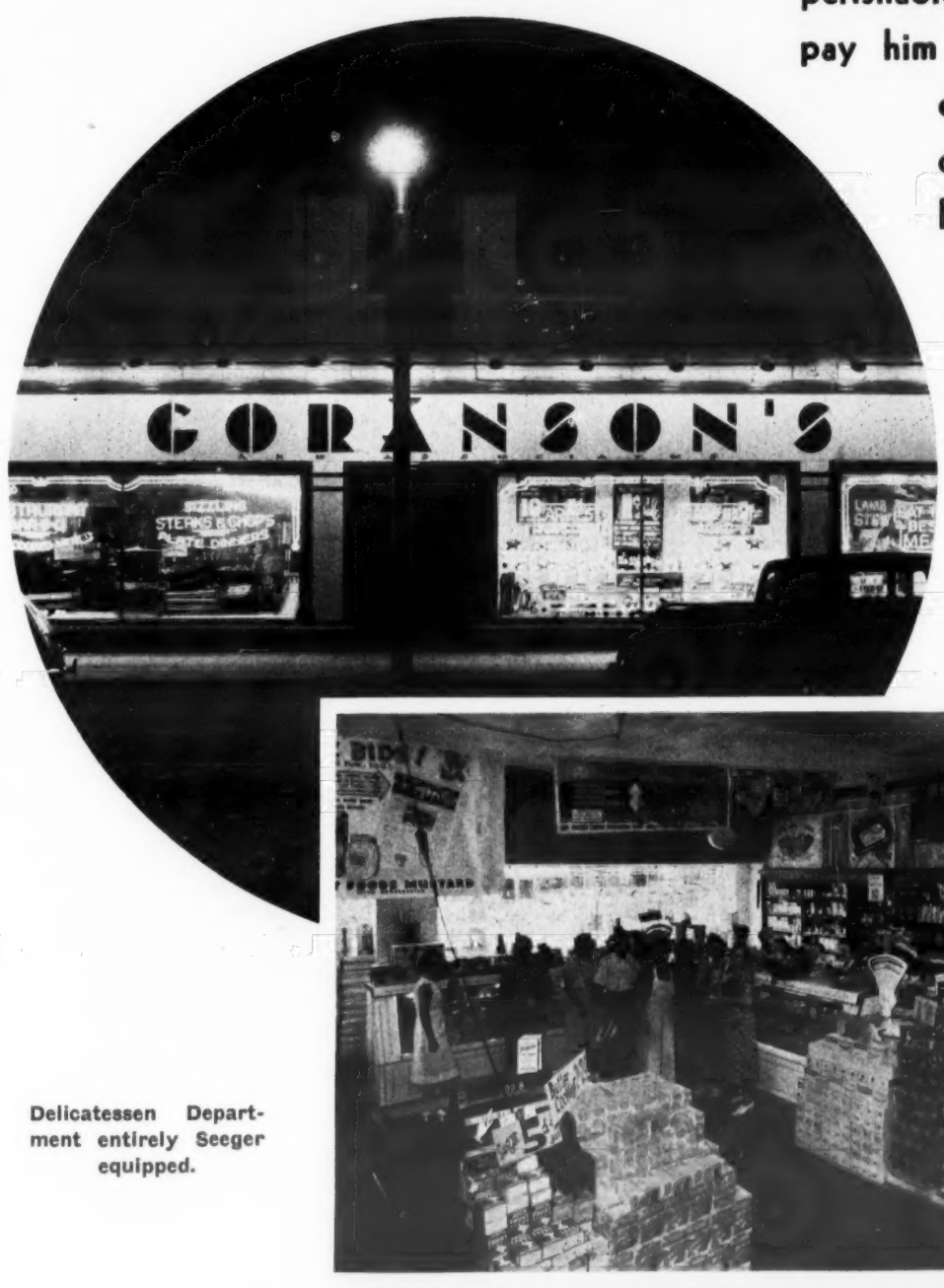
"I would strongly advise the chilling of the fresh meats as rapidly as possible by putting them in the 34-36° cooler at once. There is no advantage in precooling at the 50° temperature.

"When warm meats are placed directly in a 34-36° temperature, there is considerable moisture removed from the meats which later is deposited upon the refrigerator coils in the form of frost. Some arrangement must be made for defrosting these coils frequently in order to maintain their efficiency."

SEEGER-MADE ALL PORCELAIN *scores again*

GORANSON'S

fine, new, modern Food Market—one of Chicago's best—is fully equipped with Seeger All-Porcelain Display Cases. This successful merchant knows from experience that Seeger Display Cases will do a real job of displaying and refrigerating perishable foods and pay him dividends in economy of operation and long life.



Delicatessen Department entirely Seeger equipped.

Meat Department equipped with 48 ft. of Seeger-made all-porcelain Display Cases.

SEEGER REFRIGERATOR CO.
Saint Paul Minnesota
New York — Boston — Philadelphia — Chicago — Los Angeles — San Francisco

Distributor-Dealer Doings

'Pre-World's Fair Electrical Exposition' Planned This Month By Brooklyn Dealers

BROOKLYN—Plans for a "Pre-World's Fair Electrical Exposition for 1939," to be sponsored by the Electrical Appliance Dealers' Association of Brooklyn in cooperation with distributors and manufacturers, were announced at last week's meeting of the organization, at which officers for the coming year were elected.

According to the present tentative schedule, the exposition will open on Jan. 25 in the Knights of Columbus hall, No. 1 Prospect Park Place. Between 75 and 100 distributors and manufacturers of both major and small electrical appliances are expected to exhibit at the event.

Members of the executive board of the dealer association already have pledged themselves to purchase a total of $9,000 worth of appliances and equipment during the show, it was said. More detailed announcement of plans will be made later.

George W. Magno was elected to head the association for the coming year; Percy Peters was named first vice president; Sol Scholder, second vice president; A. H. Grafenstadt, treasurer; and Sam Klein, sergeant-at-arms.

Members also decided to create the position of executive secretary, holder of this post to be selected and engaged by the board of directors with the approval of all association members.

Bell & Raborn Head G-E Houston Division

HOUSTON, Tex.—General Electric Supply Corp. has been appointed distributor of General Electric products in the Houston and east Texas district. New offices were opened recently under management of John O. Bell. B. M. Raborn, until recently with G-E at Philadelphia, is appliance sales manager.

Lank Is Sales Manager For Sigler Firm

HARRISBURG, Pa.—O. B. Lank, a member of the sales staff of C. M. Sigler, Inc. for the past 10 years, has been appointed sales manager of the company. During his service with the company, Mr. Lank has won several awards for sales work.

Commercial Division Set Up By Buhl

DETROIT—A new and separate division, with M. B. Robb as sales manager, has been set up by Buhl Sons Co., hardware and appliance distributor here, to handle the company's sales of heating, air-conditioning, and commercial refrigeration equipment.

Carrier self-contained air conditioners up to 10 tons, Carrier commercial refrigeration, and the Evanoil line of space heaters manufactured by Evans Products Co. are the principal lines handled by the new division at present, although Mr. Robb stated that some other lines probably would be taken on.

Buhl's plans to establish a retail outlet for its Carrier equipment sometime before next February, Mr. Robb revealed. This dealership probably will be located in the vicinity of the company's wholesale house and headquarters. An extensive floor display of all lines will be maintained on the company's wholesale sales floor, however.

Some six or eight men work under Mr. Robb in the new heating division.

Phil Stratton Joins A. Baldwin & Co.

NEW ORLEANS — Phil Warren Stratton, formerly with Stratton-Warren Hardware Co. of Memphis, has been named vice president of A. Baldwin & Co., Electrolux distributor here.

Cooperative Campaigns Keep San Diego Sales Well Up

SAN DIEGO, Calif.—Estimates based on incomplete reports from members of the Bureau of Radio and Electrical Appliances of San Diego County indicate that 1938 appliance sales in this territory were well above the national average as compared with 1937 totals, J. Clark Chamberlain, secretary-manager, says in his annual review of bureau activities.

Electric refrigerator sales for the year are estimated at 7,700 units, a drop of 10.9% as compared with 1937 sales of 8,625; radio sales estimate of 12,500 units is but 1% lower than 1937, when 12,625 units were reported.

Electric range sales were off 18.7% according to the bureau's estimate, amounting to 650 units in 1938 as against 800 units in 1937, and water heater sales dropped 5.5%, with 600 units last year compared to 625 in 1937.

Washer sales amounted to 4,200 units, a drop of 2.8% from the 4,325 total in 1937, and ironers were off 13% last year, 725 sales being estimated as against 835 in the previous year.

Sales of vacuum cleaners and sewing machines were up from 1937 totals, however, with the former appliance showing 2,800 sales against 2,595 in 1937, a gain of 7.9%, and the latter 1,150 sales compared to 1,050 the previous year, an increase of 9.6%.

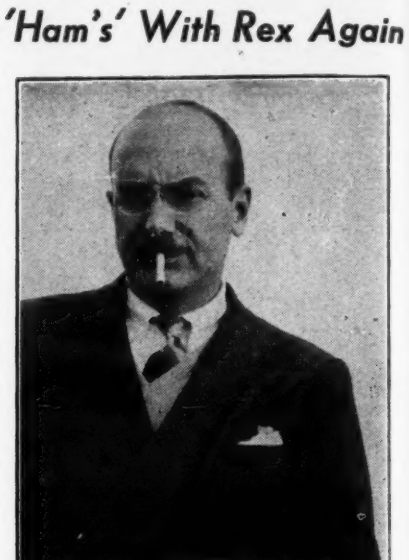
Total dollar volume of electrical appliance sales for last year is estimated at $3,000,000, only slightly less than the retail sales estimate for 1937, Mr. Chamberlain reports.

Increases are expected this year in sales of ranges, water heaters, roasters, vacuum cleaners, and certain table appliances, Mr. Chamberlain says, and refrigerator and radio sales should be about equal to last year's figures, which are considered satisfactory.

Aggressive promotional campaigns carried on throughout the year are doubtless responsible in large degree for the steady flow of 1938 sales, the report states, and an even more ambitious program is in prospect for 1939.

Campaigns last year included an "Amateur Ironers Institute" in March, which drew 10,000 visitors and 3,010 actual ironer demonstrations; the second annual Spring Fair in May, which drew 78,000 people; heavy barrage of refrigerator advertising from April through August, followed in that month by the National Salesmen's Crusade activity; a laundry equipment promotion in September, timed to hit the beginning of school; a "radio referendum" in October; and the sixth annual Electrical Show from Nov. 29 to Dec. 4, which drew 102,000 people and was more of a sales stimulator than any previous similar activity, in dealers' opinion.

'Ham's' With Rex Again



E. HAMILTON CAMPBELL

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Campbell To Direct Rex Cole Promotion

NEW YORK CITY—Appointment of E. Hamilton Campbell as manager of the advertising and sales promotion department of Rex Cole, Inc., General Electric appliance distributor, has been announced by Rex Cole, president.

A member of the Cole organization before resigning some years ago to go into the advertising business, Mr. Campbell was widely known throughout the industry in its early days through his promotional stunts for the G-E distributor in the New York territory.

Ogilvie Awarded Car For Sales Performance

LITTLE ROCK, Ark.—In appreciation of his outstanding sales work during 1938, W. F. Ogilvie, commercial refrigeration salesman for 555, Inc., Kelvinator distributor here, was awarded (on Christmas Eve) a 1939 Nash Ambassador Six two-door sedan.

Mr. Ogilvie, whose performance in locating and selling prospects last year made him one of the nine top-ranking commercial salesmen in Kelvinator's national sales organization, was presented with the keys and title to his new car by Roy E. Stueber, president of the distributorship.

R. E. Kelleher, Manager For Patterson Co., Dies

NEW ORLEANS—Robert Emmet Kelleher, 58 years old, vice president and general manager of C. T. Patterson Co., Inc., distributor of Kelvinator equipment in this territory, died here Dec. 23 after a brief illness. He was born in Little Rock, Ark.

SEE DETROIT'S New MEAT BOX CONTROL in the Refrigeration and Air Conditioning EXHIBITION BOOTHS 88 and 109

The No. 450 Meat Box Control is one of a group of new controls that are outstanding in what they have accomplished in adding greater flexibility to and reducing the cost of commercial refrigeration and air conditioning.

The spectacular features of the No. 450 Meat Box Control are:

1. Fixed cut-in setting for defrosting on every cycle.
2. The "Cold Control" dial permits temperature of the box to be easily raised or lowered by the user without disturbing the defrosting setting.
3. Special range plate showing settings for defrosting cycles with common refrigerants.
4. Prevents failure of machine to cut in during cold weather when temperature around compressor becomes low.
5. Keeps refrigerant at the expansion valve during cold weather.
6. Prevents freezing of water cooled condensers.
7. Objectionable humidity conditions caused by long "off" cycles during cold weather are eliminated—no slimy meat.
8. All metal construction—sturdy—long lived.
9. Moisture proof snap switch.
10. Supplied with special alarm circuit.
11. Instrument carries full line voltage rating.

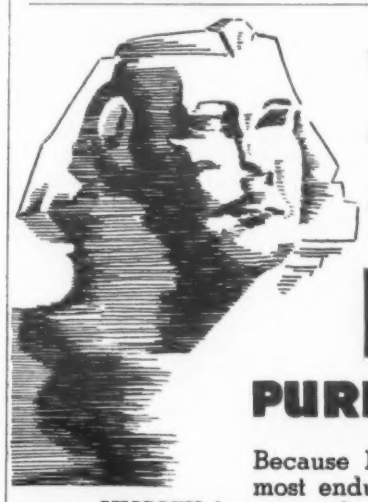
Write for further details on this remarkable development

DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

Division of American Radiator & Standard Sanitary Corporation

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg



THE MOST ENDURING AIR CONDITIONING SYSTEMS ARE MADE OF GENUINE

HUSSEY

PURE LAKE COPPER

Because Pure Lake Copper is recognized as the most enduring form of copper obtainable and because HUSSEY has specialized in the production of this outstanding type of copper for 90 years, HUSSEY has become preferred by quality-minded copper buyers everywhere.

Due to its unusual corrosion-resisting quality, HUSSEY PURE LAKE COPPER is ideal for the manufacture of Air Conditioning equipment such as Housings, Air-Washers, Blowers, Coils, Ducts, etc.

Would you like a copy of the latest Hussey Catalog?

C. G. HUSSEY & COMPANY

Division of Copper Range Company

General Offices and Rolling Mills: PITTSBURGH, PA.

Copper HUSSEY Brass

Jobber Activities

Jobbers Who Are Neighbors Plan To Hold Regional Meetings During Chicago Show

CHICAGO—Taking advantage of the opportunity offered them during their national convention during the All-Industry Exhibition, members of Refrigeration Supply Jobbers Association from several sections of the country are planning special regional get-togethers for a discussion of mutual business problems.

All of the regional meetings are planned for the evening of Wednesday, Jan. 17, in the Stevens hotel. Meetings will be held simultaneously, to take up individual problems of various sections separately, but it is possible that out of the various discussions may come suggestions for united action at the jobbers' association's official business meeting the following day.

In addition to giving jobbers from various regions the chance to discuss mutual problems, the get-together also are planned to help the men know one another better. "Get acquainted with your neighbors—you may find them pretty fine fellows," is the theme of the evening's activity.

Idea for the sectional meetings was suggested by the West Coast Refrigeration Jobbers Association, which is sending a large delegation to the convention and All-Industry Show.

Plans for similar gatherings were announced soon afterwards by members of the New England Refrigeration Jobbers Association and the MidWest Refrigeration Jobbers association, and according to latest information, at least six such meetings will be conducted.

All meetings will be informal, and will consist principally of round-table discussions of pertinent problems. Jobbers who belong to no regional association will be free to sit in on the meeting of the group they think most likely to take up matters of greatest interest to them in their home territories.

Madison Meeting Sees Air Conditioning Movie

MADISON, Wis.—Motion pictures of the air-conditioning industry were shown at the recent meeting of the Madison chapter of the Refrigeration Service Engineer's society. Herman Goldberg, Chicago, displayed the pictures and invited members of the organization, many of whom were from Marshall, Stoughton, Oshkosh, and Milwaukee, to attend the All-Industry Refrigeration & Air Conditioning Exposition in Chicago, Jan. 16 to 19. Meade Robertson, president of the group, reported on the dedication of a new Oshkosh chapter.

Oil-O-Matic Reports Loss

BLOOMINGTON, Ill. — Williams Oil-O-Matic Heating Corp. for the fiscal year ended Oct. 31, 1938, reports a net loss of $338,009, contrasted with a net profit in the preceding year of $51,627, equal to 12 cents per share.

Co-Op Electric Co. Is New Parts Jobber In Columbus

COLUMBUS, Ohio.—Formation of a new company, under the name of Co-Op Electric Co., to replace Pixley Electric Supply Co. as a jobber of refrigeration and air-conditioning parts and supplies here, has been completed by Nedford K. Mason and O. L. Jeffries.

The new firm has been issued a charter by Ohio's secretary of state, and has an authorized capital of $20,000. Mr. Jeffries and Mr. Mason have announced that they have leased the property at 300 N. Third St. as headquarters.

Co-Op Electric Co. has taken over the refrigeration and washing machine parts department of Pixley Electric Co., according to L. A. Pixley, and in addition will handle residential wiring supplies and fixtures, and other equipment for electrical contractors and service men.

Mr. Mason will specialize in the refrigeration and washing machine parts end of the business.

Airo Cartoon-Calendar Series Is Continued

CHICAGO—Humorously depicting what might happen if a butcher attempted to repair his own refrigeration equipment, the 1939 edition of the "He Tried To Do It Himself" series of cartoon-calendars, introduced last year by Airo Supply Co., jobber of refrigeration and air-conditioning parts and supplies, was sent out recently.

This type of calendar is intended to assist service men in securing more business by impressing all users of refrigeration equipment with the fact that servicing, overhauling, adjusting, etc., of this equipment should be entrusted only to men well trained in this line of work.

What Every Service Man Knows

In much larger size this cartoon is furnished by Airo Supply Co., as a Calendar, and has been a big hit with service men. Picturing the confusion which (in modified form) often follows the attempts of the store operator to service his own equipment, the calendar-cartoon is designed to impress users with the importance (and convenience) of having their repairing and adjusting work done by a service engineer.

You want fittings that STAY TIGHT

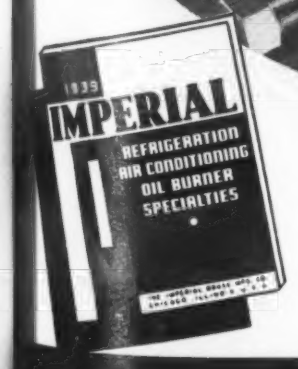
● The more experience you have had in service work the more certain you are that tubing connections *must stay tight* . . . and the more careful you are in your selection of fittings.

If there is any single reason that might account for the remarkably rapid increase in the use of Imperial fittings, it is the fact that they stay tight . . . they don't crack or split . . . they are non-porous so that even the most penetrating refrigerants won't seep through. They are heavier and stronger than standard SAE fittings and all nuts, tees, elbows and crosses are made from brass forgings. On fittings with female threads made from rod, Imperial uses extruded bronze rod. Because of the higher copper content of this extruded bronze it is not subject to the season cracking often encountered where brass rod is used. Tees and elbows have flats for wrench hold.

On your next job why not join the army of service men who are specifying Imperial to their jobbers on every order for fittings. You can get Imperial fittings in both SAE flared and solder types for tube diameters from 3/16" to 2⅝".

Specify Imperial—the fittings that stay tight.

IMPERIAL BRASS MFG. CO., 565 S. Racine Ave., Chicgao



● Thousands of service men have found the Imperial catalog very helpful in their work. In addition to fittings it covers the many types of Imperial tube working tools, testing equipment and the many other accessories that are required for the installation of an up-to-date refrigeration job.

WRITE FOR YOUR COPY TODAY!

IMPERIAL *Air Conditioning and Refrigeration Products*

STRAINERS ● DEHYDRATORS ● VALVES ● FITTINGS ● FLOATS ● CHARGING LINES ● TOOLS FOR CUTTING, FLARING, BENDING, COILING, PINCH-OFF AND SWEDGING

ARE YOU JUST A

THAT'S NOT THE LEONARD WAY OF DOING BUSINESS

Leonard Dealers are Treated as Individuals, with Problems of Their Own. They Get Help Instead of "High Pressure." They Get Plenty of Territory to Grow in, instead of Being Over-Crowded

YOU'RE NOT in business for your health. No one is.

You are looking for that very useful "net" at the end of the year. But there is more than one way of arriving at this "net." Some of the ways are painful—some pleasant.

Leonard believes that half the headaches in this business aren't necessary . . . that high-pressure selling, over-crowded territories, and over-loading, are chickens that come home to roost.

It seems that a lot of other business men agree with us . . . judging by the list of Leonard distributors shown at the right.

Run your eye down the list. You'll recognize most of them. It reads like the Blue Book of this industry.

They've been in business a long, long time. They know what it's all about.

They know that one dealer, loyal throughout the years, is a bigger asset than half a dozen who pass out of the picture.

They know that dealers must make a profit from the franchise if they are to stay in business.

They know that an electric refrigerator is different from a pack of chewing gum that can be franchised to anyone. They know that dealers need "growing room."

So the process of placing a Leonard dealer franchise isn't one of "shooting tacks at a map." They go slow and easy . . . which results in fewer dealers, but explains why Leonard dealers keep on being Leonard dealers.

We have deliberately not said a word yet about the Leonard line of '39.

The features shown at the right are simply some of the highlights. We would prefer that you see the line yourself and meet the man who stands behind it in your locality.

We bet you're going to like him.

If you believe in individual initiative and freedom of action . . . if you like "elbow room". . . we believe you'll like the Leonard way of doing business.

At least, why not find out? LEONARD, 14250 Plymouth Road, Detroit, Michigan.

ASK ANY LEONARD DEALER ABOUT THE LEONARD WAY

ATACK ON A MAP?

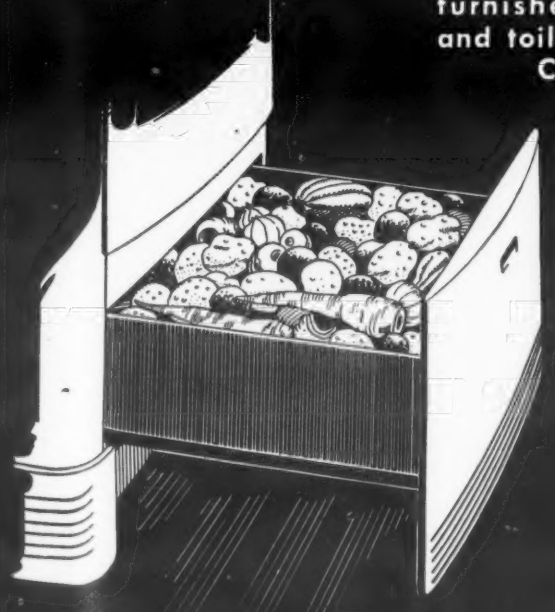
Fast Selling High Spots for 1939!

The quiet, sealed unit that gives your salesmen a sales-clinching economy story, and you a new idea of "service freedom".

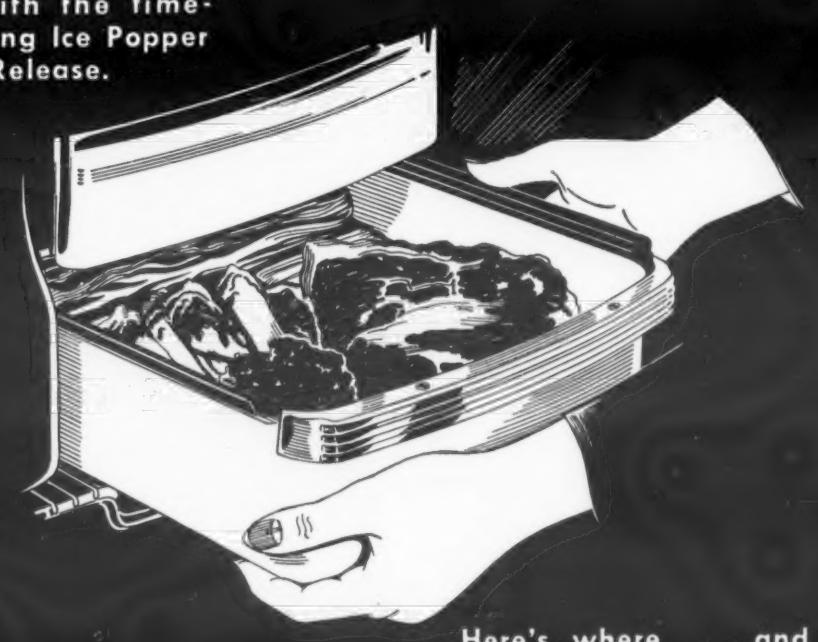
New evaporator does its bit in helping to freeze cubes faster—also provides storage space for "fast-frozen" foods.

...The Master Dial... tunes in the temperature you want inside.

All trays in standard models furnished with the time- and toil-saving Ice Popper Cube Release.



Nearly two bushels of vegetables go into this extra-capacity dry storage bin.



Here's where . . . and how . . . meats and fish are properly kept.

Leonard Travels in Good Company

Albany, N. Y.	E. S. & E. Co., Inc.
Altoona, Pa.	Electric Appliance Distributors
Amarillo, Tex.	Nunn Electric Co.
Atlanta, Ga.	Lamar-Rankin Co.
Binghamton, N. Y.	Broome Distributing Co.
Birmingham, Ala.	Watts-Newsome Co.
Boise, Idaho	Bertram Motor Supply Co.
Boston, Mass.	J. H. Burke Co.
Buffalo, N. Y.	Joseph Strauss Co.
Burlington, Vt.	Vermont Hardware Co.
Charleston, W. Va.	Eskew, Smith & Cannon
Chicago, Ill.	L. C. Wiswell Co.
Cincinnati, Ohio	Schuster Electric Co.
Cleveland, Ohio	Arnold Wholesale Corp.
Columbus, Ohio	Appliance Distributing Co.
Dallas, Texas	Peaslee-Gaulbert Corp.
Dayton, Ohio	York Supply Co.
Decatur, Ill.	Linn & Scruggs
Denver, Colo.	Hendrie & Bolthoff Co.
Des Moines, Iowa	A. A. Schneiderhahn Co.
Detroit, Mich.	Buhl Sons Co.
Dodge City, Kans.	Mullin Furniture Co.
Escanaba, Mich.	Delta Hardware Co.
Grand Rapids, Mich.	J. A. White Distributing Co.
Harrisburg, Pa.	Knerr, Inc.
Indianapolis, Ind.	United Distributing Corp.
Kansas City, Mo.	Federal Distributing Co.
Knoxville, Tenn.	Maytag Appliance Co.
Los Angeles, Cal.	Graybar Electric Co.
Louisville, Ky.	Stratton-Terstegge Co.
Memphis, Tenn.	Harry T. Wilson Co.
Miami, Florida	Major Appliances, Inc.
Milwaukee, Wisc.	Taylor Electric Co.
Montgomery, Ala.	Mathews Furniture Co.
Nashville, Tenn.	McWhorter, Weaver Co.
Newark, N. J.	E. B. Latham Co.
Newburgh, N. Y.	Shapiro Sporting Goods Co.
New Haven, Conn.	H. M. Tower Corp.
New Orleans, La.	Radio Specialty Corp.
New York, N. Y.	E. B. Latham Co.
Oklahoma City, Okla.	Otasco Supply Co.
Omaha, Nebr.	Paramount Radio Shop, Inc.
Paducah, Ky.	Gleaves & Son
Peoria, Ill.	Cohen Furniture Co.
Philadelphia, Pa.	Motor Parts Co.
Phoenix, Ariz.	Graybar Electric Co.
Pittsburgh, Pa.	J. A. Williams Co.
Portland, Maine	Cressey & Allen
Portland, Ore.	Electrical Distributing, Inc.
Providence, R. I.	Ballou, Johnson & Nichols Co.
Richmond, Va.	Graybar Electric Co.
Rochester, N. Y.	Beaucaire, Inc.
St. Louis, Mo.	Electric Lamp & Supply Co.
Salt Lake City, Utah	United Electric Supply Co.
San Francisco, Cal.	Graybar Electric Co.
Scranton, Pa.	Household Appliance Dist.
Seattle, Wash.	Seattle Hardware Co.
South Bend, Ind.	Cloud Bros.
Syracuse, N. Y.	Morris Distributing Co.
Toledo, Ohio	Electric Range & Equip. Co.
Washington, D. C.	Southern Wholesalers, Inc.
Wichita, Kans.	McKelvey's
Williamson, W. Va.	Persinger Supply Co.

★

...Doing Business

AIR CONDITIONING & REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office; Established 1926 and registered as Electric Refrigeration News

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Tribute By Carrier

IF it hadn't been for the "gadgets," those parts of a refrigerating system which make it function automatically, the mechanical refrigeration industry would have never attained its remarkable growth, says Willis Carrier, chairman of the board of the Carrier Corp. and ofttimes referred to as "the father of air conditioning."

This tribute was paid to the manufacturers and purveyors of the parts and accessories that have made possible automatic refrigerating systems by Dr. Carrier at the recent annual convention of the Refrigeration Service Engineers Society.

Tremendous Effect of Automatic Operation

"Do you think that the butcher or baker would have a mechanical refrigerating system if he had to operate all the valves and controls by hand?" Dr. Carrier asked. "Do you think that air conditioning would stand a chance of being used in offices and homes if it were not entirely automatic?"

Dr. Carrier traced the development of automatic expansion valves, pointing out how tremendously important they were in making refrigerating systems automatic and in improving the operation of such systems. He also testified to the value of the research that has been done in finding and developing the proper types of metals, refrigerants, and other materials necessary to meet the specific needs of the refrigeration industry.

Results of Improvement In Manufacturing Methods

A further factor that has been of the utmost importance, said Dr. Carrier, was the improvement of manufacturing methods, which kept the price of an automatic system within reason.

"In the early days, the addition of enough equipment to make a system automatic raised its cost 50% or more, while today the automatic system would cost little, if any, more if manually operated."

Dramatizing the Function Of Parts and Supplies

The First All-Industry Refrigeration and Air Conditioning Exhibition which opens in Chicago next week (Jan. 16-19) is sponsored by the Refrigeration Supplies & Parts Manufacturers Association. The exhibits at the *first* all-industry show will consist mainly of the devices, materials, and accessories referred to by Dr. Carrier.

The exhibition will not only serve to visualize and dramatize the important function of parts and supplies in the progress of the industry but it will also put the spotlight on this group of manufacturers as leaders in the future expansion of the business.

All Factors Seem To Favor Parts and Supplies Group

Looking at refrigeration and air conditioning as an opportunity for profitable investment of either time or money, it appears that the manufacturers of parts and supplies are in a particularly fortunate position. It seems inevitable that their market will expand, regardless of whatever trend may be taken in the production of complete units.

All the essential parts and supplies will be needed no matter whether unitary or central air-conditioning systems prove to be the most popular. This group will profit, it seems certain, if the public economizes by having old installations overhauled or goes in for replacement on a big scale.

In the household field alone the replacement market should be good for an average of a million units per year during the next 10 years. The commercial field looks equally good in dollar volume. The farm market is just opening up, via locker storage systems, and is a good bet for increasing sales of individual farm installations.

Substantial Returns on Early Contributions

The net of the situation is that the manufacturers of parts and supplies are "coming into their own" and have the prospect of being handsomely repaid for their early contributions to the progress of the industry.

Proposed Museum

DURING the recent years in which the industry has been expanding so rapidly, most men of affairs have been too busy with new developments to give much thought to the collection and preservation of antique equipment and historical records. However, whenever two or more pioneers had an opportunity to get together and reminisce about the early days, the thought has often been expressed that something should be done toward collecting and preserving items of educational value to future students of the art.

Plans for the establishment of a Refrigeration Museum are reported on the next page, with details regarding the valuable equipment which has been presented by E. T. Williams, one of the outstanding pioneers of the industry. Therefore, Mr. Williams must be officially recognized as the No. 1 contributor to the Museum.

A second contribution, specifically designated for the proposed Museum, has already been received from Clarence F. (Sandy) Pratt, president of California Refrigerator Co., San Francisco. Mr. Pratt has sent in an original copy of the Scientific American, published April 16, 1892 (nearly 47 years ago) containing a description of "The Largest Refrigerating Machine in the World," manufactured by the De la Vergne Refrigerating Co. in New York for the Anheuser-Busch Brewing Association of St. Louis. A picture of the machine is shown on the front cover.

Mr. Pratt is one of those who has previously suggested that the NEWS undertake the Museum project and he writes that he is saving some items of equipment, including old types of controls, for the permanent exhibit of pioneer devices.

"Universal Logic"

ONE small item which, in our opinion, deserves a place in the Refrigeration Museum is a pocket-size booklet of 24 pages published in 1933, entitled "Universal Logic."

It contains selections from a series of institutional advertisements which expressed the business philosophy of the late Geoffrey S. Johnston, then president of Universal Cooler Corp., Detroit (1929-35), and chairman of the Refrigeration Division of National Electrical Manufacturers Association. Mr. Johnston will long be remembered by industry leaders because of his great talent for conciliation during the period in which the manufacturers association was being developed.

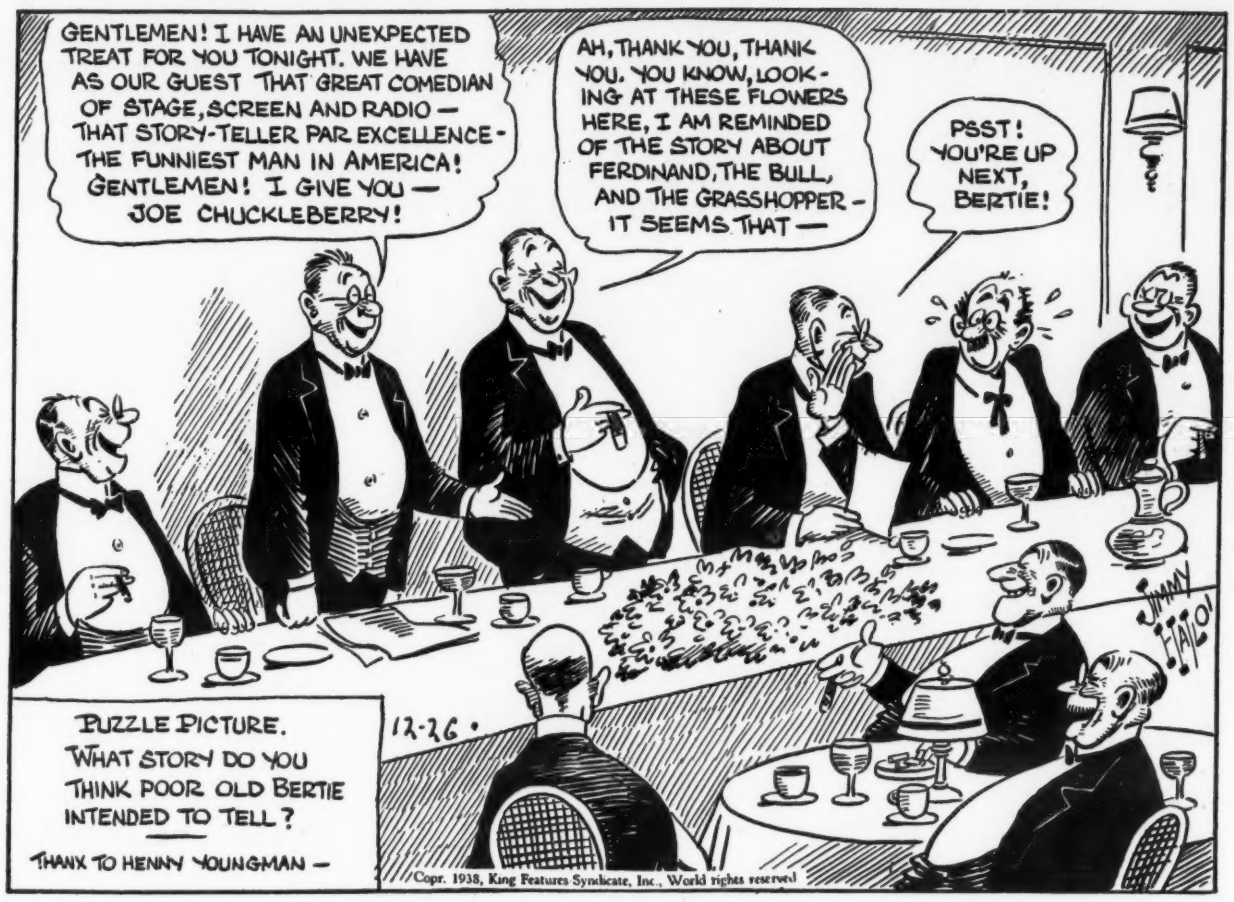
The passage of the years has not extinguished the interest in the sound philosophy which was written into this series of advertisements originally published in the NEWS during the early years of the depression (1931-32-33).

F. S. McNeal, who succeeded to the presidency of Universal Cooler Corp. after the death of Mr. Johnston (Jan. 17, 1935) has been so impressed by the recurring comments and continued requests for the booklet that he has decided to reprint the advertisements in a new series starting in this issue.

The significance of philosophical statements, from the viewpoint of the NEWS, and the justification for somewhat unusual editorial comment, may be best explained by reprinting the text of a leaflet

(Continued on next page, Col. 5)

They'll Do It Every Time . . . By Jimmy Hatlo


GENTLEMEN! I HAVE AN UNEXPECTED TREAT FOR YOU TONIGHT. WE HAVE AS OUR GUEST THAT GREAT COMEDIAN OF STAGE, SCREEN AND RADIO — THAT STORY-TELLER PAR EXCELLENCE - THE FUNNIEST MAN IN AMERICA! GENTLEMEN! I GIVE YOU — JOE CHUCKLEBERRY!
AH, THANK YOU, THANK YOU. YOU KNOW, LOOKING AT THESE FLOWERS HERE, I AM REMINDED OF THE STORY ABOUT FERDINAND, THE BULL, AND THE GRASSHOPPER - IT SEEMS THAT —
PSST! YOU'RE UP NEXT, BERTIE!
PUZZLE PICTURE. WHAT STORY DO YOU THINK POOR OLD BERTIE INTENDED TO TELL?
THANX TO HENNY YOUNGMAN —
12-26 •
JIMMY HATLO
Copr. 1938, King Features Syndicate, Inc., World rights reserved

LETTERS

Buying Refrigerators 'By the Foot'

Duane Wanamaker
Room 756 La Salle Wacker Bldg.
Chicago

Editor:

I have a friend, a manufacturers' representative operating in the South Sea Islands who wishes to buy a quantity of two (2) cubic feet boxes (electric refrigerators if you insist).

He doesn't care anything about shape, "looks," or anything else particularly, just as they will operate and keep food cold. Do any of your readers know where any such merchandise is "parked" waiting for a buyer. If so, please have them communicate with me, if this is according to Hoyle, or let you know, or whatever may be the usual procedure.

Now before there are any selling talks written on "three foot boxes just as cheap," they won't do. The idea is this: down in that part of the world, the cost of operating a refrigerator is figured on how many cubic feet it is in size. So, my friend is not interested right now in anything but 2 cubic feet refrigerator.

DUANE WANAMAKER

Information on Ammonia Machines

Rose Refrigeration Shop
Sales, Installing, Servicing, Repairing
All Makes
F. W. Sedgwick, R.S.E.S.
Office—3752 Ellis Ave.
Chicago, Ill.

Editor:

Have you a Master Service Manual on ammonia commercial refrigeration only?

If not please send me Commercial Manual No. 3 for which please find $1.00 inclosed.

I have manual No. 2 and it sure is a great help, when the old head gets somewhat mixed up.

F. W. SEDGWICK,
Manager

Answer: The Refrigeration Engineer's Manual provides information on ammonia machines.

Contract Form for 'Term' Service Work

Radio & Refrigeration Co.
882 Linden Ave., Baltimore, Md.

Editor:

We would like to know if you could tell us whether there is any plan now in operation in the United States whereby contracts covering refrigeration service can be sold to grocery store owners, lunchrooms, etc.

What we have in mind is a contract which for a small annual fee, plus cost of materials used, would agree to inspect and repair refrigeration equipment at regular intervals. If a contract of this type is being used anywhere, we should appreciate your sending us a copy.

We would thank you for whatever information you can furnish us in connection with the above. In closing might we say that we find your magazine invaluable to us in our shop?

LEON HORNSTEIN,
Proprietor

Answer: See page 24 of this issue. More information on this subject will probably be published later.

Dealers Gain Recognition For Cooperative Effort

Muncie Electric Appliance Dealers Association
Muncie, Ind.

Editor:

The writer is pleased to learn from your recent letter that you are featuring our Electrical Dealers Association in AIR CONDITIONING & REFRIGERATION NEWS. We would appreciate it very much if you would send us two extra copies for our files. Thank you for your cooperation.

T. M. FRIEL,
President

Tubing Gets Icy but The Beer Stays Warm

Bill's Ramblen 'Lectric Shop
Ashkum, Ill.

Editor:

There surely must be some book telling how to design and figure size of coils for sweet water bath in beer and novelty boxes.

This one is a two beer coil and one water coil. I made a coil, U-shaped with 50 feet of ½-inch tubing plus return bends. I can get ice to form all over tubing but still the beer isn't cold enough.

Please send Manual C-2. Any book you publish is always worth its cost.

W. FLORENT FRONVILLE

Rosenmiller Passes Orchid To Teague

York Ice Machinery Corp.
York, Pa.

Editor:

I just noticed the comment in "The Cold Canvass" column of the Dec. 28 issue of the NEWS regarding our Christmas card, and could not let it go unnoticed, as I must share the honor with Walter Dorwin Teague who designed it.

We were very glad you liked it.

J. L. ROSENMILLER,
Manager, Sales Promotion Div.

Like Good Whiskey, It Improves With Age

90 Indian Rd., Cres.
Toronto, Ont.

Editor:

I have been given a copy of your paper ELECTRIC REFRIGERATION NEWS, and find it very interesting reading. But as the copy is nine years old, I would like to see a recent copy before I subscribe for your publication.

If you could oblige by sending me a recent copy I am certain that I will be a subscriber.

WALTER BOYD.

E. T. Williams, Pioneer Refrigeration Engineer, Contributes Historic Models and Documents as a Nucleus for Refrigeration Museum To Be Established By the News

His First Household Refrigerating Machine, Exhibited at New York Electrical Show In 1913, Included In Collection

PLANS for the establishment of a refrigeration museum for the preservation of early models of equipment and documents pertaining to the development of the refrigeration and air-conditioning industry, have taken tangible form as a result of the delivery to AIR CONDITIONING & REFRIGERATION NEWS of a valuable collection of machines, photographs, and literature by E. T. Williams, consulting engineer, 51 E. 42nd St., New York City.

Mr. Williams has long been recognized as one of the outstanding pioneers of the industry. Numerous articles regarding his early inventions, as well as his current activities, have been published in the NEWS. Mr. Williams has been a member of the American Society of Refrigerating Engineers for many years and is especially well known in connection with his aggressive interest in safety codes and all measures affecting the industry's relations with the public interest.

During past years it has frequently been suggested that the NEWS undertake the sponsorship of a Refrigeration Museum and make suitable provision for the permanent care of items of historical interest which might otherwise be lost. Such proposals have doubtless been inspired by the publication in the NEWS of various articles about the work of the pioneers in the field.

On several occasions Mr. Williams has expressed his willingness to contribute to this movement. During the recent annual meeting of the American Society of Refrigerating Engineers in New York (Dec. 6-8, 1938), Mr. Williams and F. M. Cockrell, publisher of the NEWS, discussed the subject at some length and Mr. Williams made a definite decision to become the No. 1 donor.

Under date of Dec. 19, 1938, Mr. Williams wrote to Mr. Cockrell as follows:

Re: Refrigeration Museum

"I have shipped six cases of refrigerating apparatus to you for the Refrigeration Museum. The contents of these cases are as follows:

"**Case 1**—Contains my first household condensing refrigerating unit constructed and exhibited at the New York Electrical Show, held in October, 1913. This unit is covered by U. S. Patent No. 1,165,926.

"**Case 2**—Contains bronze condensing unit which was my second design of a household machine constructed. This unit is covered by Patent No. 1,164,689. This machine was exhibited at the New York Electrical Show and was also maintained in operation in the 42nd Street showroom of the New York Edison Co. for several years.

"**Case 3**—Contains an air-cooled condensing unit with impeller fan mounted on coupling between the compressor and motor. The compressor is of the rotary type. This unit is covered by Patent No. 1,392,997; Fig 8.

"**Case 4**—Contains magnet coupled motor compressor unit; Patent No. 1,568,305. This box also contains experimental parts which were loaned to the Safety Car Heating & Lighting Co. for experimental purposes. The compressor has been disassembled and is probably not in operating condition. I have not inspected the unit since it was returned from the Safety Car Heating & Lighting Co.

"**Case 5**—Contains an air-cooled condensing unit with the compressor and motor mounted on opposite sides of a multivane blower housing; air discharges through top of sheet metal casing. This unit is covered by Patent No. 1,392,997; Fig 8.

"**Case 6**—Contains brine tank and evaporator used with air-cooled units. Patent No. 1,548,080.

"Ethyl chloride and glycerine lubricant were used in all of these units.

"I find that the files which contained most of my illustrated and printed descriptive matter relating to these units have been destroyed. However, I am sending herewith such descriptive matter as I have been able to locate, which may be of interest. Identification numbers are shown on the reverse side.

PHOTOGRAPHS & LITERATURE

"No. 1—Photo print of first household refrigerator. Compressor operated by 575 r.p.m. slow-speed motor, ¼ horsepower. Same unit shipped in case No. 1 with larger motor—about 1,725 r.p.m.

"No. 2—Westerberg and Williams' Bulletin No. 20, showing first unit as mounted for operation on a refrigerator.

"No. 3—Booklet illustrating and describing bronze unit shipped in case No. 2.

"No. 4—Photograph of bronze unit shipped in case No. 2, equipped with large, variable speed motor, mounted on top of brine tank for capacity test.

"No. 5—Details of air-cooled condensing unit and evaporator shipped in case No. 3 and No. 6.

"No. 6—Illustrated folder of Williams' Simplex electrical refrigerator compressor unit and evaporator, shipped in case No. 3 and No. 6.

"No. 7—Five photostats showing details of magnetic coupled, hermetically sealed condensing unit and method of mounting on refrigerator. This is the compressor unit shipped in case No. 4.

"No. 8—Photograph showing experimental evaporator and rotary compressor condenser unit with casing removed, mounted on top of refrigerator. This condensing unit is similar to one shipped in case No. 3.

"No. 9—Photograph showing front view of condensing unit with two-stage, rotary compressor mounted on multivane blower.

"No. 10—Photograph—rear view of condensing unit with two-stage, rotary compressor, mounted on multivane blower.

"No. 11—Photograph—front view of condensing unit with single-stage, rotary compressor, mounted on multivane blower, and connected to early type Servel evaporator contained in frosted brine tank.

"No. 12—Side view of condensing unit with single-stage, rotary compressor mounted on multivane blower and connected to early type Servel evaporator contained in frosted brine tank.

"NOTE:—Units shown on photographs 9, 10, 11, and 12 were shipped in 1934 to the Servel plant at Evansville, Ind. to be held for your museum. If located they will be forwarded to you.

MANUFACTURING STARTED IN 1914

"The Electrical Refrigerating Co., Inc. constructed 100 condensing units and evaporators in three different sizes, starting in the latter part of 1914. Unfortunately, I have no complete machine of this type available to send to the museum. I had three of four of these complete units in the Servel warehouse for a number of years and all but one disappeared; and the motor and controls were taken from the one which remained.

"This I have but I fear it would not make a very attractive exhibit. The sizes were ¼, ½, and 1 hp. The compressors of these were all interchangeable in the same casing.

"The 1-hp. unit was tested over a period of eight months by the Steam Engineering Bureau of the U. S. Navy at Annapolis and approved for service, both afloat and on shore. The compressor was the single-stage, rotary type. All were fitted with shaft seals covered by my patent No. 1,292,197. The condensing unit, itself, was covered by patent No. 1,265,981. Relating to these are the following enclosures:

"No. 13—Printed dimension sheet of three sizes manufactured.

"No. 14—Sectional elevation of the 1-hp. size unit.

"No. 15—1-hp. unit with brine tank sent to Bureau of Steam Engineering, U. S. Navy at Annapolis for capacity and endurance tests.

"No. 16—Photoengraving showing ½-hp. unit mounted on large refrigerator.

"No. 17—Rear view of 1-hp unit.

"No. 18—Photograph showing application of ½-hp unit and ¼-hp. unit mounted on commercial refrigerator in the Guaranty Trust Co. kitchen. The larger unit was employed for cooling the refrigerator in the Guaranty Trust Co. offices; the smaller unit for cooling drinking water which was circulated through the offices in a piping system.

"No. 19—Front view of 1-hp. unit used at the U. S. Naval Engineering Station at Annapolis for tests.

"No. 20—1-hp. unit in Litho Print department at the Westinghouse Machine Works, East Pittsburgh, Pa., showing frosted copper table top for solidifying gelatine employed for duplicating of ink drawings on tracing cloth.

"I exhibited in the New York Electrical Show consecutively for 23 or 24 years. These shows ran about 10 days during October of each year, in either Madison Square Garden or Grand Central Palace. Up to 1915

(*Concluded on Page 26, Column 1*)

"Universal Logic"

(*Concluded from Page 22, Column 3*)

which was inserted in those copies of the above-mentioned booklet which were distributed by the NEWS some six years ago. This "foreword" reads as follows:

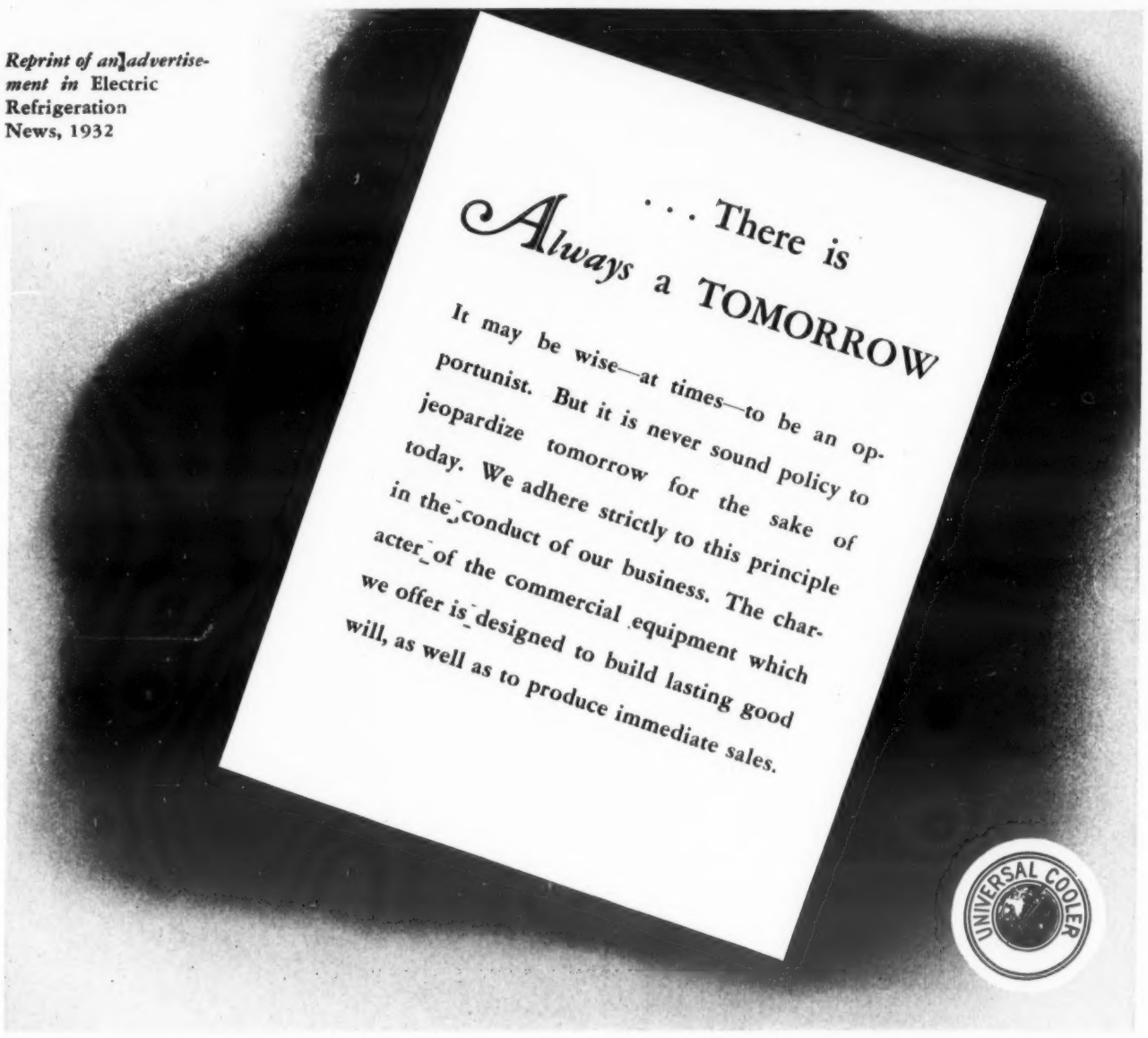
"In the heyday of our late prosperity—marked by business plenty and easy business morality—it required no great courage to embark upon confidence-building institutional advertising campaigns. Confidence in everything was a cardinal principle of daily existence. It provided an excellent theme upon which to build. And though such a campaign might not actual 'sell'—advertising appropriations were liberal—and its sponsors had abiding confidence that indirectly it would produce sales.

"Suddenly this picture changed. Confidence was shattered—shattered completely. People looked askance at everything—at business and business conduct and morality, at industry and government. Skepticism, suspicion, and doubt dominated the nation's thinking.

"Therefore, the campaign contained in this booklet is particularly gratifying to us. It is gratifying because it sought to build confidence for an entire industry as well as for the advertiser—and because our publication was selected to carry the messages. To the best of our knowledge their campaign proved a real success and helped materially to accomplish objectives which this advertiser had in mind.

F. M. COCKRELL, Publisher"

Reprint of an advertisement in Electric Refrigeration News, 1932


. . . There is
Always a TOMORROW
It may be wise—at times—to be an opportunist. But it is never sound policy to jeopardize tomorrow for the sake of today. We adhere strictly to this principle in the conduct of our business. The character of the commercial equipment which we offer is designed to build lasting good will, as well as to produce immediate sales.
UNIVERSAL COOLER

WHEN this advertisement was written, seven years ago, Universal Cooler already was building commercial refrigeration units for other manufacturers . . . and selling them to *no one else*. Because our policy was right, we enjoy a record of service *second to none*, as suppliers of condensing units to leading manufacturers in the refrigeration and air conditioning industries. The value of such a policy is proved by the fact that our largest customers seven years ago, are still our largest customers, today. Manufacturers are invited to write for complete information.

UNIVERSAL COOLER CORPORATION
DETROIT, MICHIGAN

You can PROFIT by receiving this FREE Bulletin

Artic (DU PONT METHYL CHLORIDE) SERVICE NEWS

DU PONT

Gives answers NOT found in text books—Use this Coupon

DU PONT
E. I. DU PONT DE NEMOURS & CO. INC.
The R. & H. Chemicals Dept.
Wilmington, Delaware
District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco

Gentlemen: Please send me current issue of "ARTIC" Service News and put my name on mailing list to receive future issues.

Name .....
Address .....
City ..... State .....

Service News

'Telephone Stickers' Create Repeat Business For a Service Concern

WASHINGTON, D. C.—"Telephone stickers," little gummed tags bearing the name and telephone number of the company, are credited with having been responsible for a large percentage of the volume of business done by General Refrigeration Service, Inc. here.

"Since the beginning of our business several years ago, we have procured a good many of these stickers from the local telephone company," explains J. T. Hutchisson, president of the service organization. "We have mailed these to former customers from whom we have received no service requests for a year or so, and to new customers as well. In fact, we mail them from time to time to anyone who might have a refrigerator.

"People like to shop by telephone and will do so if it is made easy enough for them. When they get these stickers they frequently put them right on the front of their telephone books.

"It is the opinion of our service manager, J. E. Baughman, and his men that these stickers have accounted for at least 60% of our total volume of business, and that they have proven more effective than all other forms of advertising combined."

General Refrigeration Service repairs and reconditions domestic and commercial refrigeration equipment and also handles air conditioning. In addition to its service work, the firm serves as distributor for refrigerated display and storage cases.

Each employe in the company's repair shop has his own individual work bench, equipped with an air compressor and air lines, soldering torches, pump down equipment and charging apparatus to minimize the danger of mixups.

United Wire Introduces New Brazing Alloy

PROVIDENCE, R. I.—A new brazing alloy called "Phosco," made in sizes from 1/16 by 20 inches to 1/4 by 36 inches, has been announced by United Wire & Supply Corp.

Phosco is designed to be self-fluxing, and is said to have low melting and flow point. Working temperature is 1,300° F., it is claimed.

The new product has a phosphorous-copper base, alloyed with another element said to vastly improve its ductility and malleability.

Cutler-Hammer Makes New-Type Switch

MILWAUKEE — A front-operated Type D enclosed switch, known as the "D-Puller," has been developed by Cutler-Hammer, Inc.

Rated at 30 amperes, the complete line consists of Bulletin 4140 devices for two and three-wire solid neutral service, and two-pole, 250-volt switches. They are available with and without dead-front plates. Bulletin 4302 is a specially designed water heater switch with a grounded neutral and dead-front construction.

Switching mechanism of the line is operated on the "push-pull" principle by a sturdy, non-warping bakelite handle. Case is 7½ inches high, 5 inches wide, and 2¾ inches deep, providing ample wiring space.

Other features include solderless connectors on the line side, "easytite" wire holes on the terminal side, and numerous well-arranged knockouts. Dead-front plate is removed by simply lifting out with the fingers.

The case is finished with rust-resisting aluminum, and also provides a good ground connection.

Congressional Library Annex Conditioned

WASHINGTON, D. C.—The new Congressional Library Annex, just completed, has air conditioning for each deck of shelves. The conditioned air will circulate over the entire area of one deck, then return to the basement to be washed and cleaned.

Service Men Should Take Care When They Draw Up a Yearly Service Contract

Many refrigeration service organizations and service engineers undertake to maintain multiple refrigeration system in hotels, apartments, and other multiple occupancy buildings on the basis of a yearly service contract.

For the information of service companies and service men, AIR CONDITIONING & REFRIGERATION NEWS has set up a sample contract, which may be altered to suit the requirements of any organization engaged in this type of service work.

In any case, no service organization or service engineer should draw up a contract of this type and start using it, without first having it examined and approved by an attorney. The NEWS cannot guarantee that the foregoing instrument will "hold water" in a legal sense, but only offers it as a starting place or working model from which a suitable contract may be drawn.

The model contract follows:

Refrigeration Service Contract

Articles of agreement entered into this ..... day of ..... 19...., between ..... refrigeration company, hereinafter referred to as the refrigeration company and ..... owner, of multiple refrigeration equipment installed in the ..... family apartment building at ..... St. ....., on the following basis:

1. This agreement contemplates complete maintenance of the refrigeration equipment under normal and usual operating conditions and does not refer to refrigerators or their parts.

Under this contract the ..... company assumes no responsibility for damage which may result from conditions beyond their control, such as fire, wind storm, external or internal violence on the part of caretakers, tenants, or others, which may result in direct damage to the equipment concerned.

This agreement does not include any work which may be required by the local building and safety engineering department, or required under existing codes and regulations.

2. ..... (owner) agrees that caretaker will follow the instructions of the ..... refrigeration company, covering oiling of the motor twice monthly, dates of oiling to be recorded subject to inspection by a ..... refrigeration company representative; to defrost all cooling units each week; and reasonable care and judgment be exercised as to cleanliness and other factors within a caretaker's or tenant's control which might have a direct bearing on the efficient operation of the equipment.

3. It is understood that in case service expense may arise through the flagrant disregard of the caretaker or tenant to follow instructions given by ..... refrigeration company and by ..... (owner) whether they may concern oiling, defrosting, or reasonable care of the unit, it will be considered the direct responsibility of ..... (owner), and may, at the discretion of the ..... refrigeration company, be billed and subject to payment by the ..... (owner).

4. Under the above conditions ..... refrigeration company, will render service and will furnish necessary parts for one year from date of this agreement for the sum of ..... Dollars.

This sum will be payable monthly in advance at the rate of ..... Dollars per month, and ..... refrigeration company reserves the right to cancel this agreement without notice if any monthly payment is not received prior to the beginning of the month which it covers.

5. This agreement indicates that certain definite responsibilities are assumed that where the human element is concerned in those responsibilities both parties will cooperate to maintain the highest degree of efficiency.

6. If the property should pass to other management than ..... (owner), assignment of this agreement can only be made with the mutual consent of ..... (owner) and the ..... refrigeration company.

7. This agreement may be cancelled by either party upon thirty (30) days written notice given at the time any monthly payment is due and payable, all the requirements of the agreement having been complied with, including payment of the monthly charges for the period of the notice.

This agreement expires .....

.....
Refrigeration Company

Per.....
Manager

ACCEPTED:

.....
(Owner)

.....
Date

We Have IMPROVED The Product

ROTARY SEAL

The Replacement Unit That Positively Prevents Shaft Leaks

Now added to the time-tested ROTARY SEAL shaft-sealing principle of construction are features that make ROTARY more than ever the ideal replacement seal for refrigeration compressors. Expanded manufacturing facilities, required to meet your increased demands, also enable us to produce these improved units at lower cost, and pass the saving on to you in lower prices. Rotary Seal Units are fully covered by U. S. and foreign patents.

SEE OUR DISPLAY AT BOOTH 153
FIRST ALL-INDUSTRY EXHIBITION
JANUARY 16-19
HOTEL STEVENS • CHICAGO

ROTARY SEAL — EASY INSTALLATION — ROTATES WITH THE SHAFT — PERFECT OPERATION

ROTARY SEAL COMPANY
803 WEST MADISON STREET
CHICAGO • ILLINOIS

And We Have LOWERED Its Price

Midwest Refrigeration Supply Jobbers Association

SERVING THE MIDWEST!

Dealers and servicemen—buy from an M.R.S. jobber—he handles the best lines, the most complete stocks, offers you quick, convenient service right in your own territory. Same day or overnight delivery. Low prices.

Write to Jobber nearest you for Refrigeration Supply Catalog

ASSOCIATION MEMBERS

United Supply Company, 207 N. 16th St., Omaha, Neb.
National Refrigeration Service, 510 W. Water St., Sioux City, Iowa
Refrigeration & Indus. Supply Co., Inc. 422 S. 7th Street, Minneapolis, Minn.
Vincent Brass & Copper Co., Inc. 100 N. 2nd Street, Minneapolis, Minn.
Refrigeration Supply Company, 359 Wesley Way, Sioux City, Iowa
Dennis Refrigeration Co., 1911 Ingersoll Ave., Des Moines, Iowa
Winterbottom Supply Company, Commercial & Miles, Waterloo, Iowa
Republic Electric Company, 116 E. First St., Davenport, Iowa

Use DRIERITE for Drying Air, Refrigerants, Industrial Gases

SOLIDS-LIQUIDS-GASES-SOLIDS-LIQUIDS-GASES-SOLIDS

and . . . VISIT OUR BOOTH NO. 3
REFRIGERATION AND AIR CONDITIONING EXHIBITION
STEVENS HOTEL, CHICAGO . . . JANUARY 16 TO 19, 1939
W. A. HAMMOND DRIERITE CO., Yellow Springs, Ohio

Locker Storages

Combination Locker Plant and Frozen Foods Wholesaling Business Finds Plenty of Customers In a City of 80,000 Persons

LINCOLN, Neb.—A combination refrigerated locker service and frozen food processing plant has worked out satisfactorily for the Coryell Commercial Center here. Established about a year ago, the company's 250 lockers have proved so popular that plans are underway for expanding the plant, while a growing market for frozen foods has been opened in Lincoln.

The refrigerated lockers are located in a cold storage house, 50 by 100 feet, equipped with a Baker ice machine and two large compressors. One room maintains a temperature of —20° F., so that vegetables, fruits, and meats can be quick-frozen to preserve their nutrition, not only for the customers who lease the lockers but for the company's frozen food business as well.

CUSTOM BUTCHERING

The company employs a skilled meat cutter who cuts the meat for the locker patrons and packages it according to their wish. If the customer wants large or small roasts, steaks, or sausages made from his meat, the plant renders that service at a nominal cost.

Each package, before being placed in the locker, is carefully wrapped in oiled paper or cellophane, and all rules of scientific refrigeration are carefully followed.

Patrons have access to their lockers 12 hours a day, including Sundays. Lockers have inside measurements of 6 cu. ft., and were built by the Amos Co. of Lincoln. Rental fee is $7.50 a year, or 70 cents per month.

ONLY 55% TO FARMERS

About 55% of the lockers now are rented to farmers, who especially like the lockers because they provide a safe place for storing meats after butchering, according to L. L. Coryell, president of the company. However, there is a growing demand for the locker service among Lincoln residents who are buying their meats at wholesale and saving from $50 to $100 a year by use of the lockers.

Fruits and vegetables also are increasing in popularity, and the Coryell company reaps a good profit from selling and freezing produce raised on the company farm adjoining the plant.

SELLING THE FROZEN FOODS

Frozen foods are sold both wholesale and retail. About 90% of the business at present is to hotels and institutions, although several Lincoln groceries and markets specializing in high-grade merchandise have installed refrigerated cases enabling them to handle the company's products. Even a Lincoln drug store recently arranged to retail Coryell frozen foods, which bear the trade name, "Coryell 70."

At the commercial center a retail store has been installed in connection with the refrigerating plant. A 14-foot "See-It-Chill" display case, made by H. Ehrlich & Sons Mfg. Co., St. Joseph, Mo., is used to display the frozen meats and poultry, while a 6-foot Frigidaire eight-compartment storage chest is used for fruits, vegetables, and ice cream. Two large quick-freeze rooms adjoin the individual locker room, and are used for storage of the company's own frozen foods. The business is largely wholesale, but the retail store keeps one man busy, the largest selling item being frozen eggs produced by the company's own flock of poultry.

WELL PUBLICIZED

Frozen foods manufactured by the Coryell company include high quality beef, pork, and lamb meats, fresh hennery eggs, full-drawn broilers, ice cream, peas, beans, sweet corn, peaches, cherries, blue berries, strawberries, and raspberries. Newspaper, direct mail, and billboard advertising are used to publicize both the "Coryell 70" frozen foods and the rental locker service.

As an example of the care taken in producing maximum quality frozen foods, the company has installed a highly specialized plant for production of "Coryell 70 Broilers." The moment the chicks are taken from the incubator they become the subject of specialized, scientific, and methodical attention. They are placed in specially constructed batteries, housed in a modern broiler building replete with both side and top windows, availing them of every possible ray of sunshine and abundance of fresh air.

The next important step is the process of feeding performed by expert poultry feeders who use only approved materials. The chicks are never given the opportunity of eating foreign substance of any kind which might prove difficult to digest.

DRESSING FOWL

In dressing, care is taken to see that the fowls are properly bled and defeathered, since the former is most essential in producing a well bleached bird, and also makes for good-keeping qualities. After this has been completed the birds are drawn, weighed, and deposited into bins according to their various weight classifications. They are then wrapped in cellophane, placed in properly sized cardboard containers, and consigned to the company's refrigeration plant at a temperature of —15° F.

The broilers are then rapidly transported under efficient refrigeration to their destination, with a minimum of time elapsing between the actual dressing of the bird and consumption.

REFRIGERATED TRANSPORT

Delivery of Coryell frozen foods to the downtown hotels and retail outlets is made by a Ford deluxe delivery job. The truck holds four carriers similar to those used by ice cream manufacturers for packing ice cream for delivery, grooved holders having been built into the truck body so as to hold two of the carriers above and two below.

The carrying cases are deposited in a cold brine solution in the quick-freeze rooms to freeze the products before delivery.

Refrigerated space at the plant includes poultry refrigeration room, 30 by 20 feet; meat chill room, 10 by 20; refrigerated room for cured meats, 12 by 12; quick-freeze room, 8 by 16; locker room, 30 by 30; quick-freeze room, 40 by 20 feet. Walls and ceiling have a foot thickness of cork for insulation.

REA May Decide on Lockers This Week

WASHINGTON, D. C.—A determination of policy with regard to financing refrigerated locker plants is expected to be one of the major issues before the annual field staff conference of the Rural Electrification Administration at Washington the week of Jan. 8.

Following a recent ruling of the Comptroller General that it is within the authority of REA to finance such projects, surveys and field trips have been conducted to provide data for or against a decision to finance locker plant construction.

Inquiries indicate that the number of communities on REA projects which want locker plants outnumber those which do not. Although the administration has financed one model plant in Ohio, operation cost figures will not be available before next summer.

$16,000 Plant Planned In Blue Earth, Minn.

BLUE EARTH, Minn.—A group of Blue Earth business men and farmers are constructing a $16,000 cold storage locker plant at Nicolet and West Sixth Sts. Capacity of the plant is 560 lockers.

President of the group is William More. Other officers of the company are Tobias Peterson, secretary-treasurer, and William Winters, Charles Greer, and William Stewart, directors.

Armstrong Cork Co., Minneapolis, has been awarded the insulation contract. The refrigeration unit contract has not yet been awarded.

Gen. Johnson's Brother Enters Locker Field

TULSA, Okla.—Alexander Johnson, Tulsa oil man and brother of Hugh Johnson, former NRA administrator, has entered the cold storage locker field with Frank Banfield Frozen Foods Co.

A second plant will be constructed here when demand warrants, and other plants are being planned for communities in northeastern Oklahoma. Banfield operates a Tulsa plant at First and Lewis Sts.

Air Blast System Will Freeze Vancouver Fish

VANCOUVER, B. C., Canada—Installation of refrigerating equipment for the quick freezing of fish in the recently completed addition to the plant of Vancouver Ice & Cold Storage Co., Ltd. has been made by Neon Products of Western Canada, Ltd., exclusive Carrier representative in British Columbia and Alberta.

Two cold diffusers mounted back-to-back in the middle of the freezing room, which is 40 feet long, 12 feet wide, and 10 feet high, blast cold, properly humidified air into the room.

Capacity designed for is 18,000 lbs. of fish cooled from 40 to 0° F. in 12 hours, said A. J. Napier, engineer in charge of the installation.

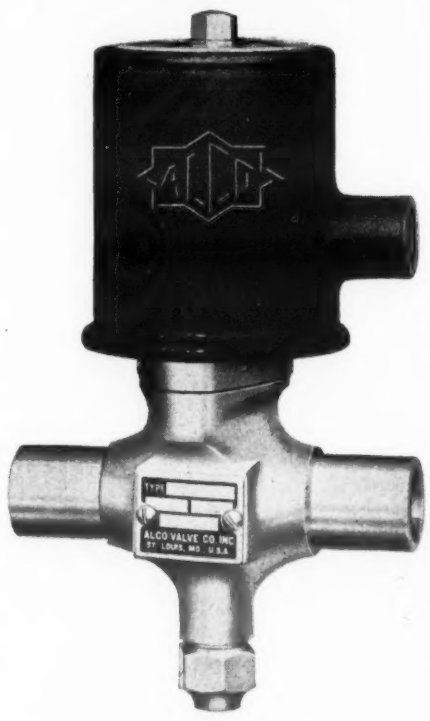
Mr. Napier added that the units have been freezing as much as 19,500 lbs. of fish in about 10 hours.

"By the installation of a false ceiling," Mr. Napier explained, "the air stream has been governed so that there is absolutely no drying of the fish, and the shrinkage has been only seven-eighths of 1%."

The fish are placed on open shelves in sideless wooden cabinets to be frozen. The new process, it is said, permits the handling of twice as much fish in a 24-hour period as did the old pipe freezing method.

ALCO Announces a completely new line of Magnetic Stop Valves

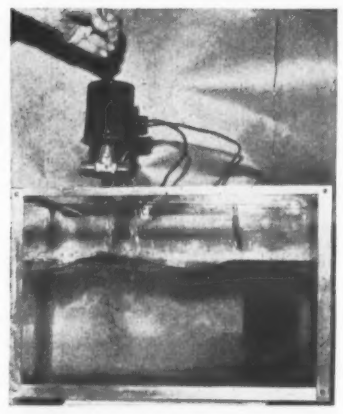
Fully Guaranteed Against Coil Burnout!



Longer Life!
Exceptional Stability!
Greater All-Round Performance!

AFTER more than a year of development work, the Alco Valve Company offers an entirely new line of magnetic valves, proven through exhaustive tests to deliver a type of performance hitherto unequalled in the industry. The new line includes valves for liquid and suction refrigerant control for Freon, Methyl chloride and Ammonia; also for brine, water, gas, air and steam. Sizes from 3/8 in. to 2 5/8 in.

Proven by these amazing tests!



Exhaustive tests proved the ability of these valves to operate satisfactorily under water, at reduced voltages, at higher pressure differentials, and under the most severe off and on service. The magnetic coil and Flamenol leads are completely waterproof, eliminating failures due to condensation of moisture in low temperature or high humidity rooms. As illustrated, in a special test, valves were placed in service and *kept under water for more than six months* WITH THE CURRENT ALTERNATELY OFF AND ON, without coil failures. Here at last are magnetic valves with completely waterproof coils!

These new valves will operate at least 850,000 times without failure of any part—this equals *an ordinary valve life of ten years*—an assurance of long life that sets a new high standard. Tests proved that the special Alco high powered coil will stand up indefinitely with the current on continuously and the valve blocked closed. Each valve is equipped with a "kick off" spring which eliminates all difficulties due to residual magnetism and assures quick closing under all conditions. Tested with a quantity of poor grade oil in the valves, perfect operation was obtained at temperatures as low as minus 50°.

Costs are Lower!

Here is the finest magnetic valve ever offered to the industry—thoroughly proven by an amazing series of tests. Yet with all improvements, this new series of Alco Valves costs even less than before.

The new line is complete from the standpoint of sizes and capacities, allowing the most economical choice of valves to meet every requirement. Write to Alco or see your jobber for full information on this completely new line of Magnetic Stop Valves—unsurpassed in performance, in stability, in long, trouble-free operating life.

ALCO VALVE CO. 2620 Big Bend Bl., St. Louis, Mo.

ENGINEERED REFRIGERANT CONTROLS FOR HIGHEST EVAPORATOR EFFICIENCY

Be sure to see the amazing performance tests on magnet and thermo valves, the glass evaporator and the complete new line of magnet valves in the Alco Booth (Nos. 79-80) at the All Industry Refrigeration and Air Conditioning Show—Chicago, Jan. 16-19.

• These Hold-over Truck Plates provide the most refrigeration per dollar invested, permit long hauls at even temperatures, preserving original quality at point of delivery.

Investigate their superiority. Write us today.

DOLE REFRIGERATING CO., 210 N. Clinton St., Chicago

HERMAN GOLDBERG CO.

MANUFACTURER'S AGENT

RANCO CONTROLS — ANSUL REFRIGERANTS

STANDARD EVAPORATORS

9 S. CLINTON ST. - CHICAGO

E. T. Williams Becomes No. 1 Contributor To Proposed Refrigeration Museum

(*Concluded from Page 23, Column 4*)

the exhibits were in the firm name of Westerberg and Williams and consisted principally of commercial ice machines, blowers, pumps, sterilizers, filters, etc. In 1915 and thereafter, the exhibit was in the name of Electrical Refrigerating Co., Inc. The first exhibit of my household machine was in 1913. Photographs were made of all of these exhibits but I find only a few which I am including herewith, thinking they may be of interest.

"No. 21—Westerberg and Williams' exhibit in 1907 at Madison Square Garden.

"No. 22—The Electrical Refrigerating Co., Inc. exhibit at Grand Central Palace, year not known.

"No. 23—Electrical Refrigerating Co., Inc., exhibit at Grand Central Palace in 1916, showing ¼-hp. and ½-hp. machines mounted on refrigerators.

"No. 24—Photograph showing Thomas A. Edison and E. T. Williams at New York Electrical Show at Grand Central Palace about 1915.

"No. 25—Thomas A. Edison after being decorated by Dr. Finley with the Degree of Doctor of Laws at the Electrical Refrigerating Co., Inc. booth at Grand Central Palace; Dr. Finley is partly hidden by and talking with Mr. Edison; my brother, Arthur Williams, is standing in front of Mr. Edison with his hat in his hand.

"Numerous other models were designed and constructed but all of these have found their way to the scrap heap. In 1902 or 1903, Westerberg and Williams were general sales agent for the Singer Ice Machine Co. Our first sale was to the City Hall Pharmacy which had a soda fountain which consisted of five or six sections, probably the largest in the city.

"The owner, Mr. Kneuper, had an idea that he could draw frappeed carbonated water directly from his fountain if he could maintain a temperature slightly below the freezing point of water while under a pressure of 150 lbs. per sq. in. which was carried in his water carbonating system. His requirement was that the carbonated water must not vary in temperature more than 1° plus or minus. He informed us that he had had four or five different makes of machines installed from time to time to accomplish this. Nothing daunted, however, we entered into a contract to do this with the provision that if we failed to maintain the temperature specified, we would remove the equipment and there would be no charge.

"The installation consisted of a 2-ton Singer condensing unit and in addition to maintaining the water temperature it provided refrigeration for a walk-in box to keep syrups, fruit, etc. A circulating system containing glycerine and water was connected through the several cooling chambers in the bottom of each of which was located a coil of block-tin tubing through which the carbonated water was circulated. The brine was maintained at 28° with plus or minus variation not exceeding 1°.

"Upon drawing the carbonated water from the tap, a certain proportion of it immediately crystalized into ice, making a perfect frappeed drink. The only serious difficulty we had was that there was no suitable thermostat available so we undertook to design one. The first one constructed, and the type finally adopted, is shown on illustrated descriptive sheet No. 26. The original was mounted in a Bristol recording thermometer casing such as shown at the northwest edge of the Bristol chart and was developed as shown at the bottom of the chart in a V-shape casing.

"The temperature scale originally ranged from zero to 110° F. Two electrical contacts mounted on a pivoted arm in such manner that the gap between them could be adjusted for a considerable range of temperature. The thermometer pointer carrying an electric contacting member was located between them so as to contact either the starting or stopping side as the temperature changed. This pivoted arm could be swung to any position on the temperature scale. Some years later this was redesigned with a temperature scale ranging from 15° to 35° for household refrigeration.

"This thermostat was the conception of a Mr. Maltbie, one of my engineers. It was very sensitive and reliable in its performance. Mr. Bristol, president of the Bristol Co., cooperated to the fullest extent and manufactured these thermostats for us. This later model is shown on illustration No. 15 and several others listed above.

"Upon completion, when payment was requested, Mr. Kneuper stated that he thought that he was buying an ice machine but found that he had purchased a 'red hot stove' on which he could fry eggs. He was referring to the top of the compressor cylinders which were not water jacketed and became pretty hot.

"Upon explaining to him that this was the best thing he could have said about the equipment inasmuch as it definitely proved that we were taking heat in considerable volume from somewhere and obviously from his soda fountain and storage room, he draw a check for the full amount of the contract and congratulated us most heartily on accomplishing a result which he had, up to the time of meeting us, considered impossible.

"Photograph No. 27 shows a Ballentyne-Cleveland ammonia condensing unit which operated in a rear room of Westerberg & Williams' offices about 1902 or 1903. This was a very smoothly operating compressor. This company was absorbed, together with the Singer Ice Machine Co., A. T. Marshall of Boston and Dunham of Hartford, to form the Federal Automatic Refrigerating Co.

"Fred Kimball, head of the fractional horsepower motor division of the General Electric Co., initiated this venture principally for the purpose of securing its business in the electric motors. This company finally became the Automatic Refrigerating Co. of Hartford, Conn.

"No. 28—This is a binder containing a few bulletins put out by Westerberg & Williams, indicating the type of equipment they dealt in. I have many hundreds of tracings of the details of refrigerating machines and installations of other types of equipment.

"For many years we were engaged in substituting electrical for steam-operated equipment in large buildings in New York which maintained their own electric generating plants. This work was done for the New York Edison Co. and included pumps, blowers, refrigerating machines, switchboards, low-pressure boilers, electric elevators; in place of steam-driven hydraulic elevators, laundries, and all other steam-operated machinery.

"Detailed drawings of practically all installations were made before the work was started. Most of these are in my files. We also made numerous air-conditioning installations, the first of which was in 1907 on the Boston Floating hospital, where the specification required the supply of 8,000 cu. ft. of fresh air per minute at 86° F. and 90% humidity to be conditioned so as to maintain the five hospital wards at 70° and 50% humidity.

"To accomplish this, the fresh air had to be cooled to 49° and then a certain proportion bypassed through a thermostat controlled heating chamber, the thermostats being located in the hospital wards and set to maintain them at 70°. Numerous such systems were installed for processing in manufacturing work such as chocolate dipping, etc. In most of these, direct ammonia expansion was used but on the hospital ship brine was circulated through coils located in an insulated chamber.

"A complete file of my patents has been ordered from the Patent Office and this will be forwarded to you as soon as it arrives.

"It is regrettable that my supply of descriptive matter is so limited and in such poor condition; and that the scrap heap has appropriated so many of my developments in valves and other automatic devices. However, I wish to assure you of my desire to cooperate in every practicable way toward the success of the museum."

PATENTS ISSUED TO E. T. WILLIAMS

A complete file of the following patents was furnished by Mr. Williams in a letter dated Dec. 22, 1938. The file will be permanently bound and made a part of the exhibit.

13,956	Reissued	July 27, 1915
16,693	Reissued	Aug. 2, 1927
17,635	Reissued	April 1, 1930
689,444	Issued	Dec. 24, 1901
780,083	Issued	Jan. 17, 1905
868,901	Issued	Oct. 22, 1907
882,224	Issued	March 17, 1908
1,050,894	Issued	Jan. 21, 1913
1,051,296	Issued	Jan. 21, 1913
1,051,297	Issued	Jan. 21, 1913
1,051,298	Issued	Jan. 21, 1913
1,051,299	Issued	Jan. 21, 1913
1,051,300	Issued	Jan. 21, 1913
1,149,009	Issued	Aug. 3, 1915
1,164,689	Issued	Dec. 21, 1915
1,165,926	Issued	Dec. 28, 1915
1,178,116	Issued	April 4, 1916
1,265,981	Issued	May 14, 1918
1,292,197	Issued	Jan. 21, 1919
1,312,600	Issued	Aug. 12, 1919
1,313,363	Issued	Aug. 19, 1919
1,327,002	Issued	Jan. 6, 1920
1,392,997	Issued	Oct. 11, 1921
1,525,845	Issued	Feb. 10, 1925
1,548,080	Issued	Aug. 4, 1925
1,556,059	Issued	Oct. 6, 1925
1,568,304	Issued	Jan. 5, 1926
1,568,305	Issued	Jan. 5, 1926
1,590,218	Issued	Jan. 29, 1926
1,645,314	Issued	Oct. 11, 1927
1,722,616	Issued	July 30, 1929
1,726,093	Issued	Aug. 27, 1929
1,736,027	Issued	Nov. 19, 1929
1,750,293	Issued	March 11, 1930
1,799,940	Issued	April 7, 1931
1,844,709	Issued	Feb. 9, 1932
1,873,237	Issued	Aug. 23, 1932
1,873,519	Issued	Aug. 23, 1932
1,895,092	Issued	Jan. 24, 1933
1,903,951	Issued	April 18, 1933
1,906,296	Issued	May 2, 1933
1,923,899	Issued	Aug. 22, 1933
1,947,574	Issued	Feb. 20, 1934
1,971,245	Issued	Aug. 21, 1934
1,927,146	Issued	Sept. 19, 1933
2,009,949	Issued	July 30, 1935
2,023,799	Issued	Dec. 10, 1935

L. H. Link, Executive of G-E Supply Corp., Dies

BRIDGEPORT, Conn.—LeRoy H. Link, secretary-treasurer of General Electric Supply Corp., since its formation in 1929, died here Jan. 3 after a short illness. He was 56 years old.

Mr. Link became associated in 1902 with the foreign department of the General Electric Co., now the International General Electric Co. He was transferred to the switchgear department of the Schenectady works in 1907, and to the collection department of the treasurer's office in 1909.

In 1919 Mr. Link was named secretary-treasurer of Wesco Supply Co., St. Louis G-E affiliate, and in 1927 he added to his duties that of vice president of Wesco.

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C 192-208 —20° F.
D 300-324 —10° F.
E 485-515 —10° F.

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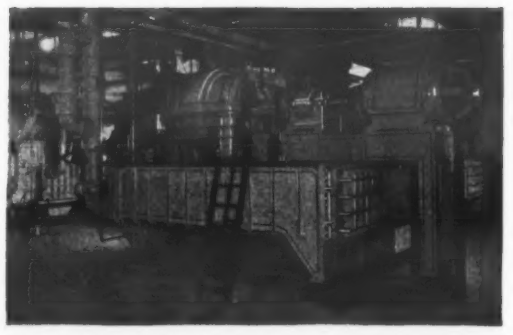
Trained lubrication engineers will gladly advise on the selection and use of Texaco Capella Oils. 2186 warehouses assure prompt delivery. To order, phone the nearest, or write: The Texas Company, 135 E. 42nd Street, N. Y. C.



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McINTIRE CONNECTOR COMPANY

NEWARK, N. J.

Installation Methods

Keep Refrigerant Lines Short and Mount Units Rigidly To Start Job Off Right

By E. G. Haight, Assistant Service Manager, Universal Cooler Corp.

IT is generally considered practical to locate the condenser close to the cooling unit or evaporator. The pressure drop in both suction and liquid lines, together with their cost, are no doubt the most important things to be considered.

The pressure drop in the suction line or the difference in pressures between the unit and the evaporator, must be kept as low as possible, as the capacity of the unit is determined by the suction pressure at which it operates. The lower the suction pressure, the lower the unit's capacity.

If it is possible to locate the unit so that both refrigerant lines are short and of the proper size, the unit capacity will not be effected. The capacity of a unit can be reduced nearly half its rating by long runs of refrigerant lines of insufficient size. This condition is particularly true on low-temperature applications.

PARTICULARLY SUCTION LINES

Pressure drop through the liquid lines does not affect the unit's capacity as seriously as in the suction line. Expansion valves are usually rated by the pressure difference across the valve, therefore an excessive pressure drop in the liquid line may affect the capacity.

Condensing unit manufacturers provide the proper size suction and liquid line connections. These line connections are usually large enough to handle normal runs.

If the installation requires long runs of tubing, consult an accurate table on pressure drop, checking the refrigerant temperature and the unit load for the refrigerant used. Rather than being uncertain, request the recommendation of the unit manufacturer.

In selecting the unit's location be sure to have it accessible. As a rule a unit not readily accessible is not well cared for. Do not make it necessary for the service man to remove the compressor in order to change the motor, or to have to disconnect the waste water line in order to remove the belt guard for belt replacements.

CONSIDER CONDENSER

The condensing medium should be fully considered in selecting the unit's location. If water cooled, be sure there is an ample supply available; if air cooled, there must be sufficient quantity available to remove the necessary heat from the condenser for proper condensation plus the heat generated by the motor. Do not locate an air-cooled unit where the air supply is filled with dust and lint. The air passages through the condenser will rapidly become filled and the result will be high head pressure and a general reduction in operating efficiency.

Avoid having the unit so located that water or other liquids may be spilled or splashed on it. Motor difficulty may result unless these precautions are taken. Baffle or shield the motor adequately if it is impossible to eliminate this condition.

Unit Mounting

One of the important factors to be considered in the installation of a commercial or air-conditioning system is the proper mounting of the condensing unit. Frequently it is necessary to take special precautions in order to keep vibration and noise at their lowest level.

In all cases provide a rigid foundation, and for larger sizes or special installations provide a concrete foundation with the necessary provisions so that it will not transmit vibrations and produce too much objectionable noise. The type of mounting required depends principally upon the conditions existing and the degree of silencing needed.

On smaller units that require provisions for the elimination of noise and vibration, the construction illustrated in Fig. 1 is often used with satisfactory results. This type of mounting is placed directly on the floor with the unit legs fastened to wood strips.

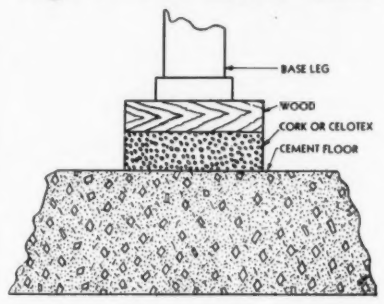
Where exceptional quietness is required, the construction in Fig. 2 has been quite satisfactory. The thickness of the felt or sound absorbing material and the cork or Celotex will depend on the size and weight of the unit to be mounted. It may be necessary for this type of mounting to extend into the floor 12 to 16 inches in order to obtain the results desired.

The construction shown should be provided under each leg of the unit. These insulating sections should be made slightly smaller than the hole provided for them in the floor so that after the unit has been placed in position, hydrolene or any good sealing material may be poured over the top of the section. This will form a waterproof seal around the edges of the insulating material and also serve as an additional breaker between the floor and the unit leg.

The construction shown in Fig. 3 is recommended for larger sized units that need to be securely anchored. The anchor bolts should be embedded in the concrete with the washers and pipe sleeves. The sleeves provide the necessary flexibility needed in lining up the anchor bolts with bolt hole dimensions of the unit base.

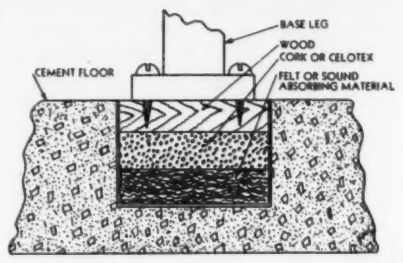
Appearance of any type unit mounting can be improved by tacking a sheet metal shroud to the wood pieces and painting the shroud to match the unit base or the floor.

Fig. 1—For Small Units



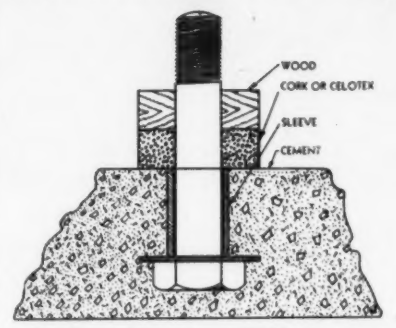
Unit placed directly on floor, with legs fastened to wood strips.

Fig. 2—For Quiet Operation



Insulating sections deep into cement floor under each leg, then sealed.

Fig. 3—For Secure Anchoring



Anchor bolts embedded in concrete with washers and pipe sleeves.

Firm's Guarantee on Grunow Replacement Unit Covers Labor

DETROIT—The R & S Parts Co. here, specializing in Grunow replacement parts and in reconditioned Grunow refrigerating units, offers an unusual guarantee on its product in that it pays for the labor involved in changing a Carrene meter or a Grunow unit that becomes defective during the guarantee period.

Replacement meters and replacement compressors carry a one-year guarantee. On the meter a labor charge amounting to $1.00 will be paid if the meter is found to be defective during the one-year warranty.

A labor charge of $1.50 is allowed for changing any replacement compressor that becomes defective during the guarantee period.

H. Strope, general manager for the R & S Parts Co. and at one time chief tester at the Grunow refrigeration plant in Chicago, claims that a charge allowed to the firm of Sprengelmeyer & Lindecker in Dubuque, Iowa was the first that had been sought by a customer in five months.

Mr. Strope declares that he has the solution to the service problem on the large-type Carrene meters which are found to be defective because of a rust condition and unprotected screens.

In fixing these meters the upper part of the meters will be set back on the can, held in place by a large "C" clamp, then spotted in four different places with silver solder, then soft soldered over. The entire inside part of the meter is bright tinned dipped and rustproofed, explains Mr. Strope.

The Activated Alumina is replaced by a large grain size. Protection against stoppage is provided by the 100% wool felts, plus the bright tinned dipping. All meters are tested for leaks and capacity, and then redehydrated before leaving the shop.

Farm Bureau In Illinois To Sponsor a Plant

BELVIDERE, Ill.—Construction of a cold storage locker plant with a capacity of 400 units has been started on the ground floor of the Boone County Farm Bureau's building here under the direction of the Bureau's cold storage committee. Cost of the plant will be approximately $7,500, according to Louis Covey, committee chairman.

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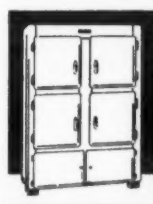
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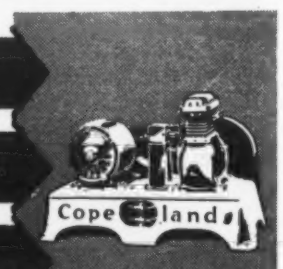

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Out of the far-reaching and painstaking research that characterizes the Ansul approach to every refrigeration problem, now comes ANSUL ICE-X, a thoroughly proved, *machine-tested* ice preventative that eliminates ice at the expansion valve.

ANSUL ICE-X combines all the qualities you need—*many of them exclusive:*

- *Eliminates ice at expansion valve.*
- *Gives immediate relief from ice trouble.*
- *Dissolves ice—prevents ice formation.*
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- *May be used with acrolein methyl chloride.*
- *Does not react with refrigerants... has no effect on oil.*
- *Leaves no residue upon evaporation.*
- *Machine-tested.*
- *Safe in use . . . free of any hazard to life or health.*
- *Easy to use.*

ICE-X is equally effective with methyl chloride, methylene chloride, and all "Freon" refrigerants.

Be sure you see the special demonstration of ICE-X in the Ansul booth (No. 77-78) at the Refrigerating & Air-Conditioning Accessories Exhibition, Stevens Hotel, Chicago, January 16-19.

CA-1-9

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Commercial Service

Service Methods on Cooling Systems For Jar Enclosure Section of Soda Fountains

Editor's Note: Information given in this article describes the various methods used to refrigerate the jar enclosure sections of soda fountains, discusses the service problems that may be encountered, and offers suggested remedies for the service problems.

This article is one in a series by Arch Black and Dean C. Seitz on the servicing of mechanically refrigerated soda fountains, ice cream cabinets, counter-type ice cream freezers, and frozen foods cabinets, which are appearing regularly in AIR CONDITIONING & REFRIGERATION NEWS.

By Arch Black and Dean C. Seitz

Jar Enclosure Cooling on Flooded Boiler Fountain

Prior to 1928 the usual method of refrigerating the jar enclosure was by means of copper contact strips connecting the ice cream brine tank and the lining of the jar enclosure. With the many advances in the art of mechanical refrigeration, it is only natural that there should be many improvements in the refrigeration of the syrup jars on a soda fountain.

Although the two-boiler creamer unit has remained until recent years the accepted construction, many variations have been made in the method of refrigerating the jar enclosure itself.

Temperature in the syrup jar enclosure is usually maintained between 20 and 30° below the room temperature. The temperature should not be allowed to get too low otherwise the water line leading from the water cooler compartment to the draught arm might freeze, or the chocolate syrup might become so thick that it will be very difficult to pump.

Today most new soda fountains have jar enclosures refrigerated by means of a separate thermostatic expansion valve and coil, or combine the expansion coil in the jar enclosure with the expansion coil in the water cooling compartment on the same thermostatic expansion valve.

Since 1928 many interesting methods of improving the syrup jar enclosure refrigeration were used, as fountain manufacturers wished not only to improve the actual temperatures of the syrup jar enclosures, but also to provide a visible frost or ice formation with its psychological advantage.

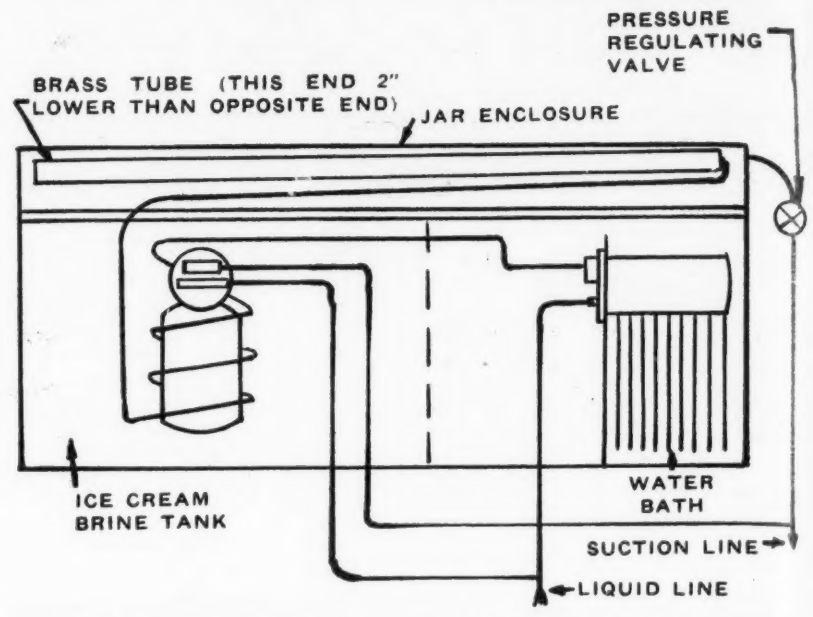
Although the metalic contact strip which was originally used was able to maintain temperatures approximately 20° below room temperature, the customer was never able to see this refrigeration with his own eyes. The actual formation of frost or ice on a coil in the syrup jar enclosure has a tremendous psychological advantage for then the customer can see the refrigeration. He does not need to believe the thermometer for he can observe that it is cold if he can see frost or ice formation.

One of the earliest methods of obtaining visible refrigeration of the jar enclosure was by means of a brine tank through copper piping installed in the syrup jar enclosure. The pump was controlled thermostatically and no auxiliary refrigeration controls or valves were necessary. The major service complaint was a leaky stuffing box. All the refrigeration complaints were exactly the same as those previously outlined under the standard two-boiler fountain.

A second novel method of refrigerating the jar enclosure was known as the regenerating method. Many fountains using this method are still in operation—it having been introduced about 1930.

Fig. 1 illustrates the refrigeration hook-up of the regenerative system. As far as the water cooling and ice cream brine tank refrigeration is concerned, the refrigeration is accomplished by means of the usual two boilers, one in the water bath, the second in the ice cream brine tank.

Fig. 1—'Regenerative' Cooling System



Hookup for cooling the jar enclosure of a boiler-type soda fountain.

In the jar enclosure is installed a brass tube, two inches in diameter, which rests the entire length of this compartment. The operation of the system can be easily understood by tracing the suction line as it leaves the water bath boiler.

The evaporated refrigerant which leaves the water boiler through the suction line first passes through a quarter-inch copper tube until it reaches the ice cream brine tank. The gas then passed through a coil consisting of 35 feet of ¼-inch copper tubing. This coil is submerged in the brine of the brine tank directly behind the ice cream boiler. As the gas passes through this coil, a portion of it is condensed into a liquid. This combination of liquid and gas then passes into the jar enclosure and enters the 2-inch diameter brass tube, which is filled with brine, and the liquid sulphur dioxide passes through a loop of ½-inch copper tubing which runs inside the 2-inch brine tube.

It should be noted that one end of the brass tube is two inches lower than the other end. This mounting forms a slight trap for the liquid refrigerant. The liquid refrigerant is again vaporized by absorbing heat from the brine of the tube which in turn refrigerates the syrup jar enclosure. The vaporized sulphur dioxide then passes into the pressure regulating valve which is connected to the standard ½-inch suction line and from there to the suction port on the condensing unit.

The term, regenerative system, has been very aptly applied for the suction gas from the water bath boiler is condensed or regenerated into a liquid which in turn is re-evaporated in the jar enclosure before the gas leaves the soda fountain.

Two very important points to check on this particular type of installation are the setting of the pressure regulating valve and the setting of the low pressure control.

The regulating valve, the same as has been previously described, should be set so that pressure is approximately 1½ lbs. at the suction valve of the sweet water bath boiler during the time that the condensing unit is in operation. This setting must be checked after about two inches of ice have formed around the water bath boiler.

In order to obtain this pressure of 1½ lbs. at the boiler, it will be necessary to have a setting of the regulating valve which may vary from 1 in. of vacuum to ½ lb. pressure, depending upon the usage and service on the fountain.

The cut-in pressure for the low-pressure control switch must not be over ½ lb., and preferably at approximately 0 lbs. pressure, if this setting is not too cold for satisfactory ice cream dipping.

The cut-out point of the low pressure control switch depends largely upon the temperature the customer desires for his bulk ice cream. The satisfactory range will usually be found to be between 15 and 17 in. of vacuum.

Service on Cooling Systems

In addition to the service problems already outlined for a two-boiler creamer unit, two additional points must be added.

1. **Frostback.** In addition to the possibility of frost-back being caused by a leaky or stuck-open float valve, there is the possibility of a frost-back due to excessive condensation in the regenerative coil mounted in the brine tank at the rear of the ice cream boiler. Under ordinary and usual operating conditions, frosting back of the suction line will not occur due to excessive condensation.

However, if a large amount of water is drawn through the draught arm in a short period of time, it may cause a slight frost-back on the suction line due to an excessive amount of sulphur dioxide vapor being condensed. This condensed liquid will flood the loop of ½-inch tubing installed inside the 2-inch brine pipe, and may flood over into the suction line through the pressure regulating valve.

This condition will not interfere with the proper temperature being produced in the jar enclosure for if excessive water is drawn from the draught arm, more refrigeration will be produced in the syrup jar enclosure because a greater portion of the loop of the ½-in. tubing will be used in evaporating this excess liquid.

(*Concluded on Page 29, Column 1*)

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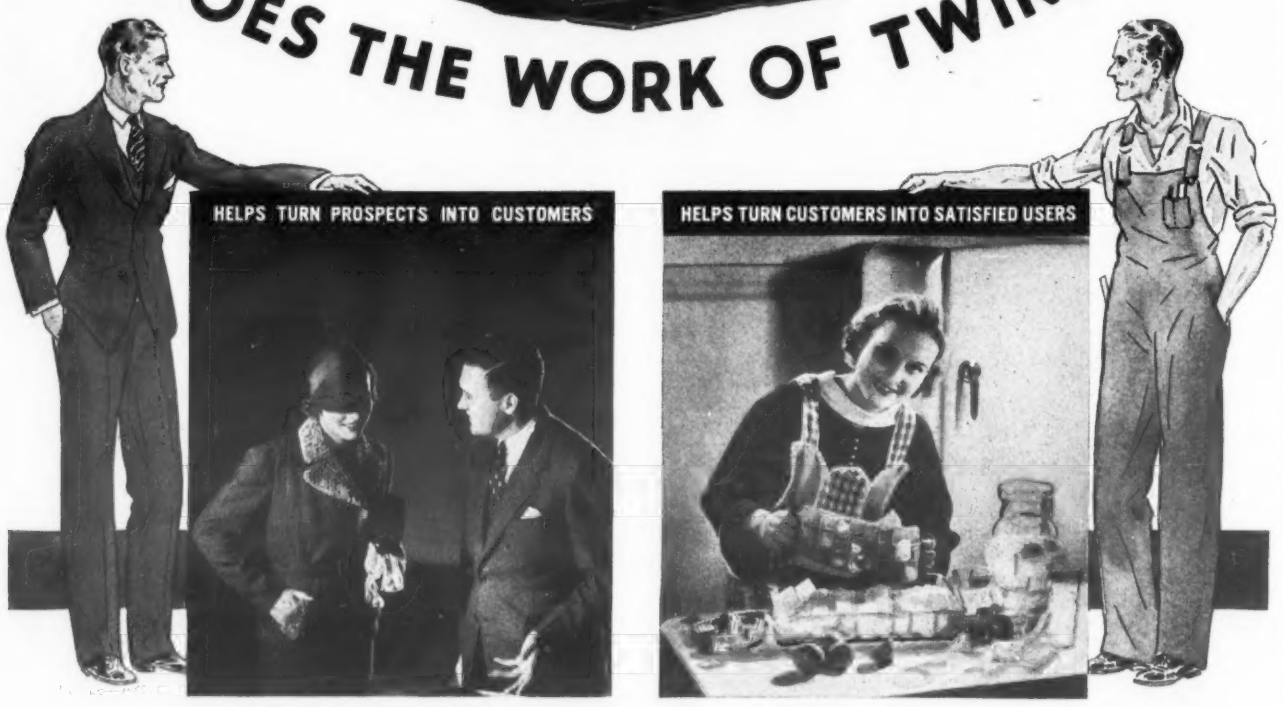

On the Sales Floor

THE motors on your refrigerators are important. Most prospects realize this, but they can judge the quality only by the name of the motor manufacturer. In what better way can you convince your prospects of the high quality of the electric equipment on your refrigerators than by being able to say that it's General Electric?

Such a statement gives a prospect the feeling that your appliances are equipped with the best, and helps to break down sales resistance. Add this electrical advantage to the long list of mechanical advantages, and your sales problem will be mostly terms and delivery.

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Service Methods

Methods of Servicing The Jar Enclosure Part of Fountains

(Concluded from Page 28, Column 5)

If the service engineer encounters an installation on which this system is used and large amounts of water are continually drawn, producing a practically continuous frost-back, the service engineer should write directly to the manufacturer of the soda fountain, rather than attempting any changes in the construction of the fountain itself.

He may be correct in his diagnosis that a reduction in the amount of condenser coil installed in the brine tank would be advisable, but he should receive his instructions and authority for making any changes directly from the fountain manufacturer. The use of a heat interchanger formed by soldering the liquid and suction lines together may be all that is necessary to eliminate complaints on an occasional frost-back.

2. Lack of refrigeration in a jar enclosure: If a very small amount of water is drawn from the draught arm, the 2-in. brass tube may become defrosted as a result of too much ice accumulating on the sweet water bath boiler. This condition would prevent the water boiler from absorbing enough heat to evaporate a sufficient amount of sulphur dioxide to supply the requirements of the syrup jar enclosure.

The remedy for this condition is to reduce the amount of ice formation on the sweet water bath boiler by slightly raising the setting of the pressure regulating valve. It should be explained to the customer that it is entirely possible that the 2-in. brass tube will defrost at night when no water is drawn and when the load on the water bath compartment is at a minimum.

The service engineer should remember that there is a continuous condensing effect because there is not a valve installed between the relatively warm sweet water bath boiler and the relatively cold condenser coil installed in the brine tank. Each time the condensing unit starts, a small amount of recondensed liquid refrigerant will pass into the jar enclosure. It is only between long off cycles of the condensing unit that the possibility of defrosting the 2-in. pipe may occur.

Before the service engineer takes it upon himself to fill the 2-in. pipe with a eutectic solution instead of brine in order to obtain a greater hold-over effect during the off cycle, he should consult the manufacturer of the fountain to obtain his definite recommendations and approval.

'Thawzone' Dehydrant Reacts With Water To Dry Out Units

NEWARK, N. J.—A liquid dehydrant which removes moisture from refrigerating systems using certain types of refrigerants is the product known as "Thawzone A" manufactured and sold by Highside Chemicals Co.

Officials of the Highside Chemicals Co. claim that extensive field tests, and the use of Thawzone A in more than 15,000 refrigeration units have demonstrated that it accomplishes the dehydrating effect with methyl chloride, "Freon-12," methylene chloride, and other refrigerants with the exception of sulphur dioxide. Results with SO_2 systems have not been satisfactory and officials of the company do not recommend that it be used for such systems.

Thawzone A reacts chemically with water, forming products which are anhydrous and harmless and do not give rise to solid material in the system. It is composed of two major components (A) an active material which breaks up the water, and (B) a blending agent which is said to insure compatibility of the active material and the refrigerant and oil.

Among the points made by Highside Chemicals Co. in regard to its product is the fact that it flows throughout the system, attacking the water as it comes to it. It does not remain in one place.

Thawzone A has been termed both a "preventative" and a "cure." It should be put into a system at the time of installation, its maker advises, to insure against freeze-ups. When there is trouble in the sytsem due to moisture Thawzone A should be introduced and circulation restored so as to allow Thawzone A to flow to all parts of the system, breaking up the moisture.

Usual charge of Thawzone A is about 2 cubic centimeters, or about ½ teaspoonful per pound of refrigerant.

When Thawzone A is to be charged into new or reconditioned machines in the service shop, recommended method is to suck it into the crankcase. It should be tightly stoppered in its container, and not exposed to the air any more than is necessary.

In the field the needed amount should be charged into the liquid line or the evaporator. Jobs which have been treated previously with methyl alcohol, or which are very dirty jobs, had best be drained and recharged with new oil and refrigerant.

New Compound Designed To Clean Spray Booths

NEWARK, N. J.—A new spray-booth compound, said to facilitate cleaning of spray booths and therefore to help reduce both fire hazard and marring of finished work by dirt spots, has been developed by Maas & Waldstein, maker of industrial finishes.

To comply with regulations of the National Board of Fire Underwriters and to maintain high standards of safety and workmanship, the flammable and unsightly residues that collect in a spray booth must be cleaned out frequently.

The new M & W compound is designed to simplify such cleaning. If before using the spray booth, all exposed surfaces are covered with this non-hardening, non-oily, brush-applied preparation, the residues from sprayed lacquer, paint, or enamel are deposited on the compound rather than the wall of the booth. Then, when it is desired to clean the booth, the compound and the residues which have collected on it may be easily and completely removed with a putty knife.

Mechanic's Lien May Be Attacked As Deterrent To Home Building

DURHAM, N. C.—Mechanic's lien laws, first adopted to attract workmen into the building trades, today have so many complicated requirements that they are having the reverse effect. That is the opinion of Bettin Stalling, head attorney of the reconditioning division of the Home Owners' Loan Corporation, writing in the autumn Home Financing issue of Law and Contemporary Problems, Duke University Law School quarterly.

To remove the complex lien law as a deterrent to home building and to discourage loose credit practices which it promotes in the industry, Mr. Stalling proposes the formulation of a uniform simplified lien law applicable only to small home construction. In his article, he outlines broadly the principles to govern such a statute and points out that its limited scope would greatly lessen the problem of securing legislative acceptance.

He recognizes a justification for intricate provisions to protect mechanics and materialmen engaging in large construction jobs, but argues that this does not apply to small home construction where the credit extended is small and where the home builder has difficulty in complying with the statutory steps necessary to avoid the risk of double liability.

Mr. Stalling's article is one of nine studies of the legal aspects of the home financing problem which comprise the law school's issue. Articles are devoted to depicting and appraising the main developments in home financing during the years of crisis and recovery, with emphasis on the legal factors in the situation.

It is felt that there is an imperative need for expansion in home building and when such an expansion is impending on a large scale, it is important to make sure that laws governing mortgage lending neither place unnecessary obstacles in the way of such expansion nor permit the recurrence of the unsound financial practices which were revealed by the depression.

Air-Conditioning Course Offered By Columbia

NEW YORK CITY — Columbia University's school of architecture, in conjunction with its department of mechanical engineering, is offering two evening courses in air conditioning this year in both winter and spring sessions.

As described in the school's catalog, Air Conditioning I is a basic, generalized course presenting the elements of air conditioning and outlining the scope of the industry and its field of activity. It includes psychrometry, air distribution, heat transmission through building construction, heating and refrigeration methods, solution of practical problems, and discussions of the characteristics and current forms of available equipment.

This class is taught by Cullen E. Parmelee, who has been associated with Carrier Corp. and Airtemp New York Co., Inc.

Air Conditioning II is a technical course giving detailed consideration to the selection of air-conditioning equipment and to the solution of problems dealing with quantitative relations in the performance of elements of systems and installation assemblies in buildings.

It also presents analyses of zoning methods, the economy of bypass control, and the various special methods of producing refrigeration and dehumidification. Occasional inspections of new developments are made and special exhibits and engineering meetings are attended outside of class periods. The instructor is Albert J. Lawless, a partner in a firm of consulting engineers, Boston.

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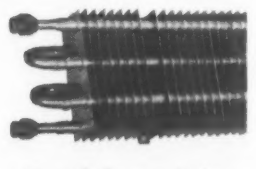

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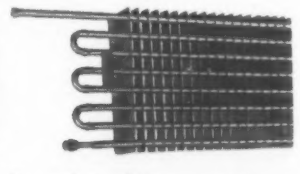

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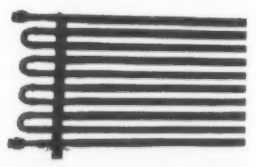

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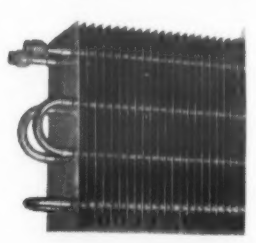

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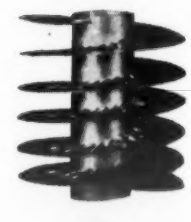

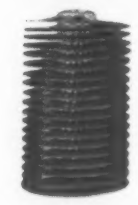

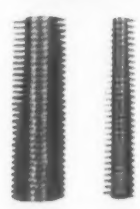

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Air Conditioning

Benefits of Continuous Blower Operation Can Be Obtained With 2-Speed Motor And Use of Proper Controls, Denges Says

CINCINNATI—Advantages of continuous blower operation in warm air heating and air-conditioning systems, and methods of obtaining the same effect by the use of certain control devices, were described by G. W. Denges of the Williamson Heater Co. in his address before the annual meeting of the Warm Air Heating and Air Conditioning Association held last month here.

"Continuous blower operation is not an entirely new function, even though it has not been generally employed in the heating industry," Mr. Denges said.

"Air-conditioning systems, particularly those used for process conditioning, have incorporated this principle for a good many years and it has proven very satisfactory.

"Since it is an accepted fact that the blower must be operated constantly in order to obtain the very exacting requirements of process conditioning, it certainly is reasonable to believe that we in our industry must work toward that goal.

ADVANTAGES

"To what extent would continuous blower operation be helpful, and is it actually desirable?" Mr. Denges asked.

"The advantages which may be obtained by constant air circulation as compared to intermittent operation are as follows:

"1. More uniform room temperatures.

"2. Fuel economy.

"3. Closer humidity control and less condensation.

"4. Better filtering and less infiltration.

"5. More quiet operation.

"Analyzing each of these advantages in order, uniform temperatures are maintained throughout the entire house and also the temperature difference between floor and ceiling is materially reduced. This is due to the fact that the air within the rooms is constantly in motion and there are also from five to eight air changes per hour whereas, in an installation where single speed intermittent operation is used the blower operates approximately one third of the time, thus allowing stratification and an actual air change of only one to three times per hour.

"In addition to maintaining more even temperatures within the rooms there is also less temperature fluctuation above or below the setting of the thermostat. When additional heat is required and the heat generator is called into action, almost immediately some of this heat is transmitted up into the house.

OVERRUN REDUCED

"Also since only a small amount of heat is required to bring the temperature high enough to satisfy the thermostat the heat generator does not operate for a very long period, as a result there is very little excess heat and this reduces overruns to a minimum.

"Depending upon the type of fuel used it should be possible to keep the temperature fluctuations within 1½°. Actual tests have proven that more uniform temperatures can be obtained with constant blower operation and I believe that point can be accepted theoretically since it stands to reason that if a body of air within a space is mixed more rapidly and more often that lower temperature difference will result.

"Fuel economy is a direct result of more uniform temperatures since under these conditions the heat loss is reduced. As an example, in a room where single speed intermittent blower operation is used the floor temperature in an average installation would be approximately 68° and the ceiling temperature 77°. An approximate average inside wall temperature under these conditions would then be 72½°.

"In a room where the air is constantly in circulation and the floor temperature is 68° the ceiling line temperature would be approximately 74° or an average of 71°.

"Since the rate of heat loss is directly proportional to the difference between inside and outside temperatures the lower average temperature would effect a reduction in wall heat loss of 2%. The ceiling heat loss would also be reduced about 5% and the glass loss by approximately 1½%.

FUEL SAVING

"Under comparable conditions undoubtedly a saving in fuel can be realized by constant blower operation. However, it is an accepted fact that air in motion has a cooling effect on the body and although no definite determination has been reached it is possible that a higher room temperature will have to be maintained to produce the same feeling of warmth and this of course would affect to some degree any fuel saving.

"Closer humidity control is obtained with continuous blower operation because moisture may be added to the air at any time the humidistat calls for it and will be carried up into the living quarters. This is not always possible with intermittent operation as the humidistat may call for moisture at a time when the blower is not in operation and since the moisture could not be transmitted up into the house most humidity control systems do not permit the humidifier to function during an off blower period.

LESS CONDENSATION

"Less condensation on windows and other cold surfaces is due to the fact that when air is circulated within a room, normally the inside surface temperature is slightly higher than if exposed to still air.

"Since the quantity of condensation is governed by the difference between the dewpoint temperature of the air and a lower surface temperature, any increase effected in the temperature of the surface will naturally reduce condensation.

"Much of the dust and dirt within a house, particularly the fine particles, will remain suspended in the air as long as it is in circulation and if the air is carried through the filters from five to eight times per hour instead of two or three times, a much larger percentage of dust will be removed.

KEEPS OUT DIRT

"Further, the bulk of the dirt which enters a house comes in around the windows and doors due to infiltration. With continuous blower operation a small percentage of outside air can be introduced and on days when the wind is mild, enough pressure can be built up within the house to cause exfiltration which, of course, would eliminate considerable dirt.

"More quiet operation in using constant blower operation results only from the fact that the frequent starting and stopping of the motor is eliminated. This is not generally a serious objection particularly after the occupants become accustomed to it. However, anything which can be done to avoid any objections, no matter how minor they may be, will aid in selling our equipment.

"These five points generally sum up the advantages which can be obtained with continuous blower operation and there may be more, however, they would only contribute to one of these phases.

SOME DISADVANTAGES

"There is also a disadvantage to the use of continuous blower operation," Mr. Denges declared, "and it is with this feature that we should be most vitally concerned.

"The most serious objection to a system where the blower operates continuously is low register air temperatures and although this condition can be overcome to a great extent it adds to the initial cost of an installation.

"Another objection is the increased power cost which naturally would result from continuous operation of a motor. This actually is not as serious as it might appear since the increase will normally be only 10 to 20% more than for single speed intermittent operation, depending on the characteristics of the motor used. This is caused by the fact that a motor requires considerably more current for starting than it does for running.

"Such an increased power cost can normally be disregarded as it is offset by fuel savings. There are other disadvantages; however, these do not apply to general, but to the particular type of system and fuel used."

Although perfection is most desirable, said Mr. Denges, in heating some happy medium is normally more practical, and with this in mind it has not been difficult to obtain in a good measure all of the benefits which constant blower operation offers, but also to overcome the objections.

"Although we may lose to some degree the benefits of constant air circulation by stopping the blower when register air temperatures become too low," he continued, "this seems to be the most logical solution to our problem.

"A good many installations have been in operation for some time using variable speed motors and so controlled that some air is delivered into the living quarters most of the time and these jobs in general have been very satisfactory.

WITH TWO-SPEED MOTOR

"The system which seems to give best results and is least expensive both from the standpoint of initial cost and operating expense is one in which a two speed motor is used in conjunction with suitable controls.

"To understand more clearly the complete function of such a system let us use as an example an installation with a gun-type oil burner equipped with conventional controls such as an anticipating or accelerating type thermostat, limit control and a protectorelay. The blower motor controls are connected entirely independent of the burner controls and consist of a limit control to make the high and low speed circuits and another limit control to break the circuit at a low bonnet temperature.

"Although the control settings may vary slightly from one installation to another, in general we can assume that the thermostat is adjusted to maintain a temperature in the house of 72° and the limit control set to turn the burner off if the bonnet temperature exceeds 200°.

CONTROLS SETTING

"The blower controls should be set so that when the bonnet temperature is between 125° and 160° the blower will operate on slow speed, and when the bonnet temperature exceeds 160° it will operate on high speed. The low limit should be set so that at any time the bonnet temperature is below 125° the blower would not be in operation.

"Normal cycle of such a system is as follows: During an off period the temperature in the house drops and the thermostat will make contact from ½ to 1½° below the setting depending on the type of thermostat used. This in turn brings the oil burner into operation and when sufficient heat is generated to raise the bonnet air temperature to 125° the blower motor is started on low speed.

"Should the bonnet temperature continue to rise and reach 160° the blower motor is automatically switched into high speed. During this period some heat has been carried up into the house and in addition artificial heat has been applied to the thermostat by means of a small resistance which is built in.

HOW IT WORKS

"Even though the temperature of the air within the rooms has not warmed sufficiently to satisfy the thermostat, enough artificial heat has been supplied to break the circuit and stop the operation of the oil burner. The blower continues to run and within a short period enough heat is removed from the bonnet to drop the air temperature below 160° and then the blower motor is transferred back into the lower speed. This low speed operation normally continues until most of the heat has been re-

(Concluded on Page 31, Column 1)

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Variable Speeds For Blowers Suggested

(*Concluded from Page 30, Column 5*)

moved and the temperature drops below 125°.

"Since the oil burner has not been in operation during the last cycle of low speed operation there has not been sufficient heat generated to raise the temperature of the house more than ½ to 1° higher than the setting of the thermostat.

"Local weather conditions, the amount of air circulated and many other characteristics of the particular system used will undoubtedly vary the control settings and the cycle of operation, but the general principles as outlined should apply in all cases."

The example used to clarify the operating cycle is similar to a system installed in the research residence during the winter of 1936 and 1937, declared Mr. Denges, and a very careful study of its operation was made at that time. The summary of the results obtained briefly are as follows:

WHAT TESTS SHOWED

1. Although the electrical cost was greater with two speed operation the total expense for both current and fuel was approximately the same as for single speed operation.

2. The blower operated from 70 to 90% more, depending on the indoor-outdoor temperature difference and when the outside temperature was low the blower operated as many as 20.6 hours per day whereas on single speed under approximately the same conditions it operated only 12 hours per day.

3. The temperature conditions within the rooms were improved as the temperature differential between the floor and ceiling was reduced and there was less variation from the setting of the thermostat.

4. The movement of air in the rooms was more moderate since the blower operated on low speed for a great portion of the time.

Similar results have been reported on many other installations where variable speed blower operation has been tested and practically all types of fuel have been used, declared the speaker.

A DIFFERENT PLAN

The use of a variable speed motor is the most popular method for obtaining more blower operation. However, there is another arrangement which has been used to some extent.

In place of the variable speed motor a modulating damper motor is connected to a series of dampers either in the inlet or outlet of the blower. Actuated by a limit control in the bonnet the dampers will assume various positions between open and closed, this sets up enough resistance to vary the flow of air.

Although information on this method is rather limited, reports indicate that similar conditions to those obtained with a variable speed motor are possible. There is a particular disadvantage to this arrangement in that it is difficult to throttle the flow of air by means of a damper without creating air noise. Further investigation will undoubtedly be conducted and a means may be found to make this method practical.

There is another factor closely related to blower operation which if perfected should make it possible to obtain even better comfort conditions, stated Mr. Denges. The rate at which heat is generated determines the length of blower operation since it is controlled from the air temperature in the bonnet of the furnace. Therefore, if this temperature can be so adjusted to correspond more closely with the outside weather conditions it is possible to have the blower run continuously, except in very mild weather.

He reported that on gas and some oil-fired units a modulating valve has been used to regulate the flow of gas or oil to the burner in order to obtain either a high, medium or low fire and this combined with variable speed blower operation has produced excellent results.

Some objections have been registered on the installations where both the burner and the blower are allowed to operate on low regardless of whether or not the temperature in the house is satisfactory, and this results in overruns particularly in mild weather.

Portable Air Cooler In A Ship Offers Problems

AMSTERDAM, Netherlands — Results of the first installation of a portable air-conditioning unit in the cabin of an ocean liner are being studied by marine engineers who are considering widespread use of air cooling for passenger ships.

The unit was installed in the Dutch mail ship Marnix van St. Aldegonde for Sultan van Langkat of the Netherlands East Indies, who was making the voyage from Java to the Netherlands to be present at the jubilee celebration of Queen Wilhelmina's 40 years on the throne.

Installed in the sultan's deluxe cabin by engineers in Java, the portable unit was of the water-cooled type. Fresh water was used for the condenser, as a special condenser for seawater was not available at the time of the installation.

Compressor motor, fan motor, fan, and housing, and electrical controls all were converted to operate on the ship's 220-volt direct current. Discharge pipe of the compressor with the flexible joint was relocated so that it would not strike any part of the unit while still or rolling.

An arrangement was made so that only one line and one hole had to go through the side of the ship for the common drain line of the evaporator and the outlet of the condenser.

A third mounting was installed under the primary air fan because of the rolling of the ship, but the spring mountings under the compressor weathered the trip.

Windows and shutters on the ship are lowered when opened, so a small wooden block was placed in the top part of the window frame and the outside air duct connected to this board and the back of the unit. This arrangement permitted full use of the windows and shutters without extensive alterations.

Fleisher Speaks Before Los Angeles Group

LOS ANGELES — Walter L. Fleisher, New York City consulting engineer and chairman of the research committee of American Society of Heating & Ventilating Engineers, told how "Research Finds Comfort and Efficiency Zones for Workers" at a joint meeting of local American Society of Refrigerating Engineers and A.S.H.V.E. members.

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Pre-Fabricated Duct Advocate Says They Would Fit 85% of All Jobs

CINCINNATI—Describing air distribution systems as "the bottle neck of the winter air-conditioning industry," P. S. Miller, general manager of Lamneck Products, Inc., Columbus, Ohio, urged delegates attending the National Warm Air Heating and Air Conditioning Association convention here recently to cooperate with the manufacturer of prefabricated duct and fittings to obtain "the final answer to the major problems confronting the warm air industry.

"My position in this matter constitutes no quarrel with the shop producing hand-made or tailor-made duct and fittings," Mr. Miller said. "My interest is in standardization and its relation to lower installation and material costs, efficiency of operation, neatness of appearance, and general satisfaction resultant therefrom."

Speaking from intimate contact with "the majority of manufacturers of winter air conditioning," Mr. Miller asserted that "they request reduced costs of both installation material and installation labor—demand efficient operation and neatness of appearance, but above all they are interested in the maintenance of high practical standards. All of the foregoing can and must be provided by the manufacturer of prefabricated ducts if he is to serve his proper function in this industry."

Mr. Miller asserted that while the manufacturer of warm air equipment may ship a "perfectly designed, engineered, and manufactured product," he is at the mercy of "the large and indefinite human equation in the various communities in which his product may be sold and installed. He is never in complete control of this situation unless he adopts and demands that the installation of his unit be made with the use of standardized prefabricated duct and fittings, of the size, fit, resistance, and performance with which he is entirely familiar. The human equation can and will wreck many of his otherwise well laid plans."

Defending the policy of some prefabricated duct manufacturers who engage in research, Mr. Miller stated that this work is being done "in a spirit of helpfulness and service to the industry," and "to speed up and expedite the ultimate which we all seek."

Claiming that all of the material necessary for "85% of the winter air-conditioning jobs quoted in the residential field can be obtained from a properly stocked wholesaler of prefabricated duct and fittings," Mr. Miller urged that this material be used as a logical method of increasing the entire unit of sale.

Considering prefabricated ductwork from the standpoint of the layout and engineering department, Mr. Miller believes that this department may save many errors and a great deal of time by "designating various fittings by a catalog number instead of laborious measurements and specifications."

Predicting that "the time will come when the unit manufacturer will sell a complete system to his distributor, rather than merely a heating unit," Mr. Miller stated that resistance to the use of prefabricated duct must be overcome by the duct manufacturer, through intelligent selling.

Citing advantages to the dealer who sells prefabricated duct, Mr. Miller emphasized the importance of a "predetermined knowledge of profit or loss," made possible by the use of this type of duct system. Mr. Miller also stressed the importance of releasing the dealer's time for sales work, and that of his men for making installations.

New Firm To Make Grilles, Registers

MUSKEGON, Mich.—Air Control Products, Inc., has been organized here to manufacture registers, grilles, damper regulators, and other accessories for the heating and air-conditioning industry. Authorized capitalization of the new company is $150,000, and it is expected that production on a portion of the new line of equipment will be under way by Feb. 1.

Robert L. Leigh, who has been associated with the Hart & Cooley Mfg. Co. for the past four years, and who was previously connected with the Uni-Flo Grille Corp., has been elected president and general manager of the new concern. Arnold G. Anderson is vice president.

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*Trade-mark for White-Rodgers Device Registered, 1938, White-Rodgers Electric Co.

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But "*Sharp Tuning*" in accuracy is only one of the many big advantages of the WHITE-RODGERS "HYDRAULIC-ACTION" CONTROL. This remarkable new unit provides a POSITIVE SNAP-ACTION AND CONTACT . . . never before possible . . . which make it immune to any normal vibration or "off-level" installation. It's unusually easy to install, too. Requires no service attention. And costs no more than other, far less accurate controls.

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"Hydraulic-Action" controls are also available through Julien P. Friez & Sons, Baltimore, Md., Division of Bendix Aviation Corporation, for 63 years the Makers of America's Weather Instruments.

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This control has a range of 20° to 75°F. Stops on the numbered plate on front of cover limit movement of knob to 10° of this range. Any 10° range may be selected by a simple readjustment of the knob in respect to the calibrated dial. External knob on this control, together with the stops that limit its movement, make it possible for the tavern keeper to readily change the control point from a minimum to a maximum setting.

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MAIL COUPON FOR DETAILS

WHITE-RODGERS ELECTRIC COMPANY
1209 Cass Ave., Dept. ACRN-139, St. Louis, Mo.

Gentlemen: I am interested in White-Rodgers "*Sharp Tuning*" for (type of product)_____

*Firm*_____

*Individual*_____

*Street No.*_____

*City*_____ *State*_____

Foreign News

Primitive Beauty & Primitive Living Habits Plus Many Friendly Roadside Vendors Are Mrs. Knight's Impression of Mexico

Editor's Note: When Mel Knight, sales manager for Peerless of America, and Mrs. Knight took a trip to Mexico they brought back in words and pictures a fine record of what they had observed. Many members of the industry have seen their colored movies, and now the NEWS is having the pleasure of publishing the detailed and colorful report of the trip which Mrs. Knight wrote. First part of this report was published in last week's issue, and it is probable that more of it will appear in the next issue.

By Mrs. M. W. Knight

There is no question that when it comes to attractions to offer visitors, Mexico City must be placed with the best of them.

The city is located in a basin 300 miles southeast of the center of Mexico, half way between the Gulf of Mexico and the Pacific ocean. Floor of the basin is flat, with the exception of one peak in the center. Basin is circular in shape with a 40-mile diameter and is 7,500 feet above sea level. It is surrounded by mountains ranging from 10,000 to 19,000 feet high.

Mexico City is located in the center of this valley and has a lone peak, which rises 1,000 feet. On its pinnacle is the palace of presidents, although the present one, Lazaro Cardenas, does not live there.

Inside, the palace is ornately and gorgeously decorated with everything from French furniture inlaid with bronze to pure Chinese pieces.

Scene from the palace balcony is similar to that from the Acropolis in Athens, and unquestionably is one of the world's most beautiful views.

At the base of the palace hill is another circle, about half a mile across, formed by Chapultepec (grasshopper) park, with its artificial lakes artistically laid out, and its dense growth of big Ahuehuette trees. Largest of these trees is 46 feet in girth.

Beyond the park, the city stretches in a three-quarter circle two miles across.

The Mexicans' flare for color in the roofs of buildings makes the city blend beautifully with the dark green park belt on one side and farm colors on the other.

Around the City of Mexico the visitor slowly goes in a new American made taxi. This costs $1.50 per hour in American money.

The flower market would thrill the heart of any botanist or flower lover. Sidewalks for two blocks are packed with every conceivable flower that grows. The main market, a short distance away, runs for six blocks in one direction and three in the other. It is close to the center of town.

Over on the other side of the city is the Thieves' Market. It is run similar to our pawn shops, but on a lower and bigger scale. Thieves take their loot there and sell it.

Of the numerous points of interest proper, by far the most unique is presented by Xochimilco, 20 miles to the south.

It is the site of the floating gardens. This is a small Indian town, and there are miles and miles of canals, and the banks are all flowers and trees, and you can ride as long as you wish in a sort of gondola.

The middle of the boat has chairs, a table if you wish, and is covered with canvas. The top front of this covering is decorated in all sorts of lovely designs put on every morning with hundreds of fresh flowers.

The history and commercial value of the layout are of small value to the average tourist visiting them on Sunday. The festive spirt of Latin America is out in force. Flowers of every color and shade furnish the background. Rowboats and canoes, seating anywhere from two to 30 persons and all dressed up like a Fourth of July parade, float about in the canals.

NATIVES UNSPOILED

Perhaps the greatest charm in the place is that the natives are still controllable. The tourists haven't spoiled them.

There are all sorts of things to get your money. Photographers come along and take your pictures. Men in other boats are selling food, others drinks, and dozens of boats are laden high with flowers for sale.

Of course, we had to have some. We bought a huge bouquet of red carnations (about 250), about two dozen gardenias, and a large bunch of violets (what we would pay three or four dollars for) all for two pesos, or 40 cents, believe it or not.

As one rents a float for a ride through the canals, the first impression is of the deftness displayed by the youngsters rowing the boats.

They get them in and out of tight places with little effort. The waters are filled with every conceivable kind of peddler's boat. Some carry little stoves cooking hot dogs and potatoes, and some offer cold drinks.

But the prettiest, of course, are those piled high with flowers. All, naturally, try to make a sale, but they are not obnoxious if no interest is displayed.

Many little dime-a-dance places spot the sides of the canals, so if romantic couples tire of the water they may tie up and dance a while. Music can be heard on the water. Little flatboats carrying musicians are looking for business.

AN INDIAN LEGEND

In the dim, dark years before Cortez' invasion of this country, so history and fable go, one tribe of nomad Indians got the upper hand of another tribe and banished their victims to the swamp lands—a piece of land about 25 miles long and 5 miles wide—for the purpose of extinguishing their opponents by starvation.

The victims proved too energetic to starve. Instead of giving up the ghost and quitting, they went to work, divided the territory into sections, laid out and excavated—or rather dredged—streets and put the muck onto the lots.

Today these streets, or canals, as they actually are, furnish the transportation arteries for perhaps the richest small pieces of land in the country.

The canals generally are about 15 feet wide and 4 feet deep. The islands go up about 4 feet above the water and are flat on top. These little islands, cut up like city blocks, furnish all the vegetables and flowers used by Mexico City.

Bull fighting in Mexico holds a position like baseball in the United States—it is the national sport. Every Sunday, with the exception of the rainy season in July, August, and September, a bull fight is held in Mexico City. The fighting in December, January, and February is for professionals, and the other six months for amateurs.

FIGHTING THE BULL

The bull ring is architecturally like the old Roman Coliseum, and the seats for 35,000 spectators form a complete circle. The arena is about 250 feet in diameter, with a stout side wall 4½ feet high surrounding it.

There is a narrow promenade back of the wall, used exclusively by participants, mainly as a refuge if the bull gets tough. The boxes and choice seats are immediately above the promenade. Other seats rise on a steep slope to a height of 100 feet.

The price of seats is governed by their location on the shady or sunny side. The fights begin at 4 p.m. and last about two hours. At the start, a bugle sounds and a parade of open cars circles the arena bearing Mexican society girls in a ritual called breaking the ground for good luck.

I always knew Spanish houses had patios, but I was surprised to see how very few had any yard in front. Most of the buildings form a solid wall, with just a sidewalk and then the street. They have quite a lot of pavements, but there are plenty of unpaved roads too, and the ones which are paved have big jagged holes which you must avoid in driving. Right downtown, however, the roads are quite good.

One odd thing—all the laundry tubs and clothes lines are on the flat roof tops of houses, apartments, etc. That is, in the city. You see, they have no back yards like we have. Some of the parks have public wash places. Possibly 12 or 14 places.

It would be as though your laundry tub had no legs, and six or seven women can wash in one row and facing them is another six or seven, and they get down on their knees.

A CREEK LAUNDRY

Of course, out in the smaller towns everyone just goes down to the river bank or a tiny creek about 2 or 3 feet wide. You might see some washing clothes, then a women giving a small child a bath, and then someone rinsing their dishes in that dirty water.

How would you feel about that? Well, that how I felt, too. It sort of makes you sick. Of course, in the desert folks don't have water enough to be able to wash and bathe.

One day we left at 8 a.m. with a guide and drove over 100 miles to Cuernavca and Taxco. In Cuernavaca we went through the Borda gardens and learned the story of Borda's life.

He was a poor man, and one day near Taxco his burro's foot sank in the earth, and in extricating him Borda picked up samples of rock. The ore turned out to be a rich silver strike, and he became a fabulously wealthy man.

He built this big home and acres of ground were laid out in gardens, and there were two huge swimming pools. One for servants, and the other for him.

He fell madly in love with a young girl and brought her to live with him. When he died, he left everything to her and just a little to charity.

The priest came to the girl and tried to find out where all the wealth was kept, as she alone knew. After trying for weeks to make her tell, he murdered her one night and threw her body in the pool.

NO TREASURE FOUND

Then they looked and dug for the treasure, but no one has ever found it. Now the government owns the property and has leased the house as a restaurant. Everything remains in a state of decay.

It was only two blocks from this Palace Gardens where Ambassador Morrow lived while in Mexico. His house was on a narrow street which we would call an alley.

Then about 6 or 8 blocks away we saw the palace of Cortez. To me it was rather awe-inspiring to know that I was standing on the porch where he had stood 'way back in the early 1500's, and looking at the huge paintings of that era which were still in a good state of preservation.

Then we drove on through the mountains to Taxco, which is one of the oldest towns in Mexico (and that is really saying something). Its streets are very winding, very hilly, and very narrow. It is cobblestone paved.

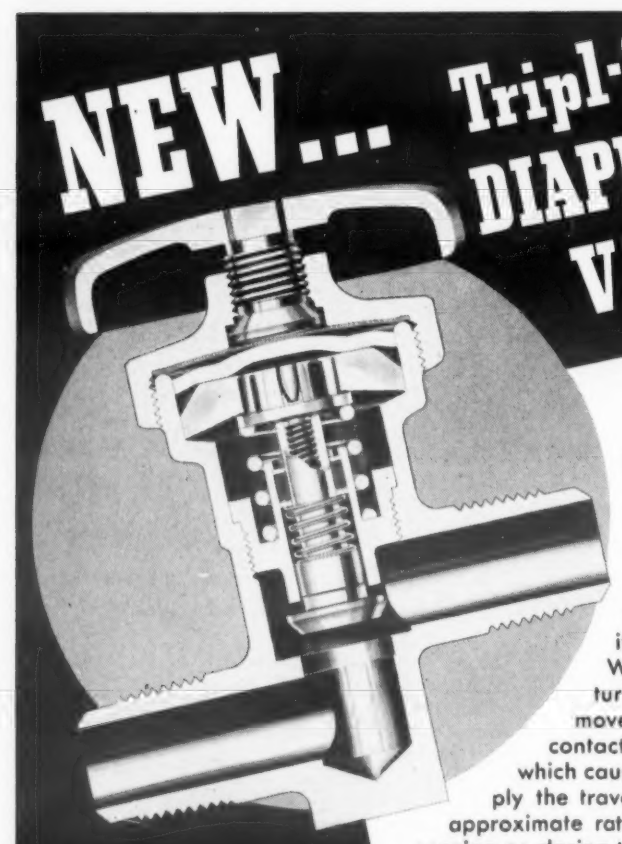
CATHEDRAL IMPRESSES

There we went through a cathedral. There were four altars. And the statues were wood carvings all carved by the Indians. It was the most impressive thing I have ever seen. This cathedral was built by Borda after he became so wealthy, and he and his sons preached there. We saw huge paintings of them on the walls. Some of the walls were at least 8 feet thick.

Taxco is the craziest laid out town I ever saw. Its narrow winding streets twist and turn and are so steep that it seems incredible that a car can make the grade. This town and its people were never heard of until Mexico built the highway.

It seems that almost every community has its own language, and people from one town cannot understand those who live 30 miles or so away.

We were told by the guide that Indians will walk 25 or 30 miles to town on market day and sleep beside the road. They bring their pottery, etc. by hand as they are afraid to trust the buses. Then they take a bus home.



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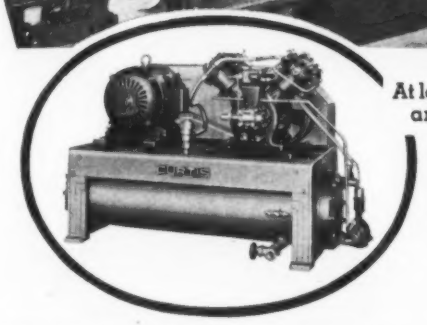
The CURTIS Tool Room and Metal Pattern Shop

This illustration shows a view of the Curtis tool room and pattern shop where all metal patterns, jigs, templates and special tools are made by expert tool and pattern makers. All wooden patterns are also made at Curtis. Such close, accurate control of designing and manufacturing processes is characteristic of Curtis, and our own pattern shops are another reason why Curtis is able to build extra value into every piece of Curtis equipment. From drawing board to shipping room, Curtis products are completely produced in the Curtis plant. The result is the exceptional value reflected in the high efficiency, economical operation and dependable performance of every Curtis unit.



At left—The Curtis 15 H.P. Shell and Tube Condensing Unit.

CURTIS REFRIGERATION AIR CONDITIONING AND COMMERCIAL

"Builders of Condensing Units Since 1922"

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Division of Curtis Manufacturing Company

Commercial Refrigeration

Department Store Offers a Large and Diverse Field For Commercial Units

By Henry Knowlton, Jr.

DETROIT—Application of air-conditioning and commercial refrigeration to problems of human comfort and food preservation constitutes one of the most important phases of department store merchandising today, asserts Ralph B. Netting, building superintendent of the J. L. Hudson Co. department store here.

Widely publicized has been Hudson's 5,000-ton air-conditioning system, generally regarded as the largest in the world, but the store probably places more value in commercial refrigeration systems used for 30-odd walk-in refrigerators, three fur storage vaults, ice cream making, cooling of drinking water for 140 fountains, ice cream hardening, and the dispensing of "frosted malted" soft ice cream.

All refrigeration equipment in the building is in charge of Harold Warr, chief mechanical engineer, who was associated with Carrier Corp. before joining the J. L. Hudson Co. staff in 1928.

At the time Mr. Warr began work with the company, much of the refrigeration equipment used in the building was being installed and many additions have been made to the systems since.

UNUSUAL FUR STORAGE

Among the commercial systems used in the Hudson store, the method of handling fur storage is of unusual interest. At the time this equipment was installed there were many applications of refrigeration to fur storage throughout the country, but according to Mr. Warr, some of these systems left much to be desired.

After consulting with the Department of Agriculture at Washington, D. C., Mr. Warr visited some 20 fur storage plants throughout the country, gathering data for the new plant. The result was the so-called "refrigeration shock" method, which has since become accepted in many parts of the country.

Data gathered by Mr. Warr at this time has been used as a model for fur storage systems in Macy's department store, New York City, and in other large retail stores.

Furs kept by the J. L. Hudson Co. are stored in three large vaults, each measuring 75 x 100 feet which are three tiers high. Stairways and cat walks running through the vaults are constructed of metal grille work, permitting free passage of air through the entire area.

CO_2 REFRIGERATION SYSTEM

Refrigeration is by means of a direct expansion CO_2 system, located outside the vaults. Air is forced over large bunker coils built of extra heavy steel pipe and then carried through ducts, which are heavily insulated with cork, to the vaults. The system is kept in operation throughout the year, and a special fire-protection system is used.

Refrigeration machines serving the vaults are one 30-ton, 75-hp. Brunswick-Kroeschell unit and one 15-ton, 30-hp. compressor of the same make. The machines operate at 980 lbs. pressure and make-up gas (CO_2) used to operate the system amounts to about 300 lbs. per week.

This system was installed prior to the use of Freon as a refrigerant and before the application of finned surface to forced air work at low temperatures. Mr. Warr believes that good results could be obtained today with Freon refrigeration machines, using finned tubing in the air stream.

Fans serving the vaults deliver a total of 12,000 c.f.m. on the 45-ton load; something in excess of what would be demanded of an air-conditioning system operating at higher coil and air temperatures.

The "shock" method, or cooling cycle used by Mr. Warr in the storage of furs is as follows. Furs are first cleaned by compressed air to remove all traces of dust and dirt. Normal temperature of the vaults is 40° F.

This temperature is first dropped to 18° F. to kill larvae and bacteria in the furs. After four consecutive days at 18° the temperature is raised to 50° F. by means of steam coils in the ducts, and is kept at this temperature for two days.

According to Mr. Warr, bacteria and larvae that have not been killed by the first drop to 18° will be "brought to life," or will start growing in the relatively warm air.

After the germs and moth larvae have had a good chance to start growing the temperature is again reduced to 18° F. for two full 24-hour days and is then returned to the 40° "normal" temperature.

This "shocking" process is carried out about once each month, with exceptionally fine results, Mr. Warr asserts. Since the method was developed in 1929, no better "cycle" or temperature system has been developed for this purpose, he states.

BIG ICE CREAM JOB

On the eighteenth floor of the building, where the fur storage machine room is located, is a 7½-ton Brunswick-Kroeschell machine used to cool brine for freezing ice cream and for the ice cream sharp freezer (hardening room) which is located in the thirteenth floor kitchens. Two Emery Thompson freezers are used in making ice cream.

This compressor serves a tank where brine is cooled to 8° F. below zero, by means of direct expansion CO_2 pipe coils in the tank. This brine is then piped to a point in the building five floors below and, after being used, is pumped back to the refrigerated tank.

Also located in the same machine room is one 40-ton CO_2 machine, which serves six walk-in coolers and a 5-ton icemaker. Blocks of ice are stored in walk-in refrigerators, and moved throughout the store as they are needed.

30 COOLERS

Some 30 walk-in refrigerators are cooled by brine pumped from a 70-ton Brunswick-Kroeschell CO_2 compressor located in the fourth basement of the building. Boxes cooled by this machine include three fish boxes, three salad boxes, four meat boxes, four used for storing vegetables, four used to hold perishable pastry, four for milk and cream, two for ice (block and cracked), and two for the storage of fruit.

One unusual use of walk-in refrigerators is found in garbage storage boxes in two kitchens in the store. Garbage is placed in closed receptacles, placed in the reach-in refrigerators where it is held at 40° F. until it is removed from the building after the kitchens are closed.

Mr. Warr asserts that only by this method is it possible to do away with objectionable germs and other resultant inconveniences in handling food refuse in a large cooking operation.

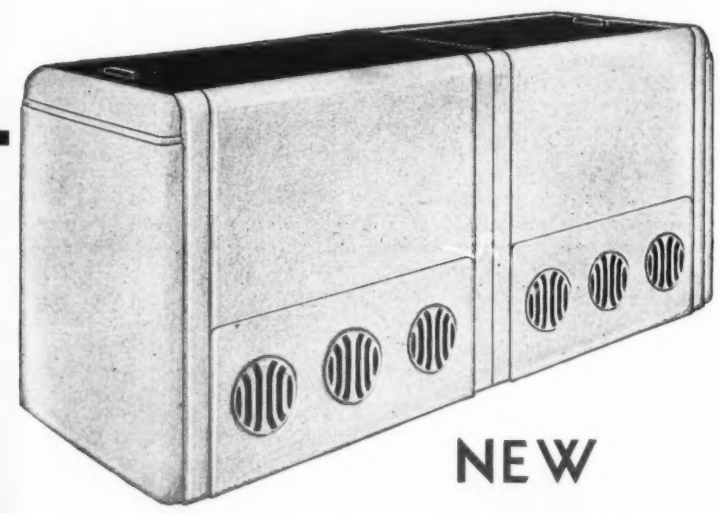
One of the most recent applications of refrigeration in the J. L. Hudson Co. is the use of two "frosted malted milk" machines, which were supplied by the Mills Novelty Co. of Chicago. Each of these units is of 5-ton capacity (Freon) and will produce about 5 gallons of "frosted malted" (soft ice cream) every 15 minutes.

Frozen malted is served directly from the machines, or is stored in low temperature ice cream cabinets located between the two machines. Because of the fact that the machines "make ice cream" the Detroit Board of Health required that they be installed behind glass enclosed panels. Attended by two counter clerks, the machines seem capable of serving a large number of people.

When traffic in the second basement of the store is slow patrons gather around the machines one deep, when it is normal, two and three deep, and when there is a rush it is almost impossible to trade a dime for some of the frozen delicacy.

Drinking water used throughout the building is kept at quite a low temperature, Mr. Warr said. Water leaves the large shell-and-tube coolers in the basement at 40 to 45° F. and does not exceed 50° F. in very hot weather. The water is cooled by CO_2 machines in two tanks which measure 5 feet in diameter by 14 feet long and 6 feet in diameter by 12 feet long. Mr. Warr states that "policy" of the establishment dictates that every patron gets "good cold water" at all times. No filters are necessary due to the treatment of water by the city of Detroit.

Mr. Warr believes that refrigeration applications, particularly in the air-conditioning field, will become smaller as time goes on. The compressor, or source of refrigeration may still be large, but the "conditioning unit" or place where the air is cooled will tend to become smaller, rather than larger. Mr. Warr feels that the ideal size of conditioner in a large air-conditioning application will run between 10 and 50 tons, but seldom larger.



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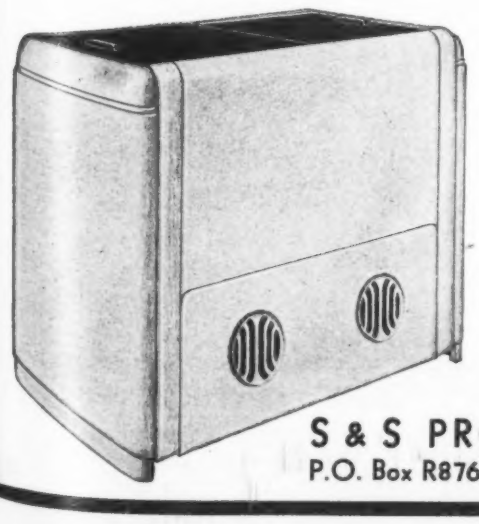

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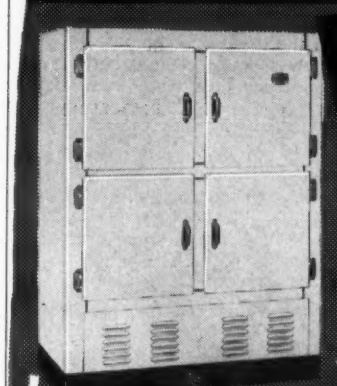
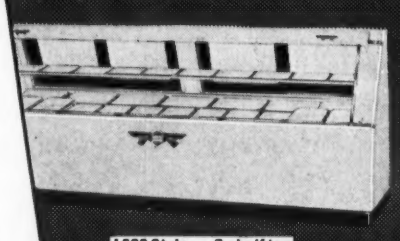
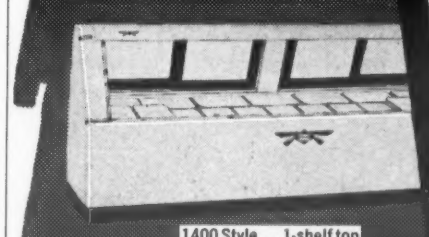


30... One of three reach-in refrigerators featuring up-draft circulation.

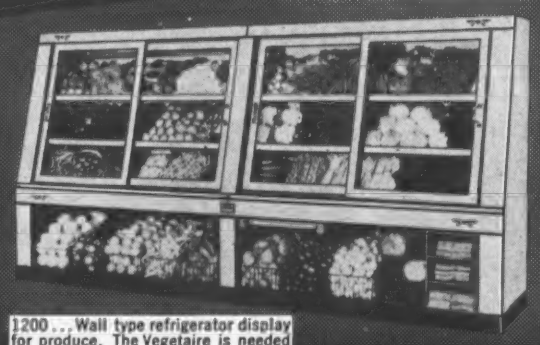


1600 Style... 2-shelf top display or double duty.

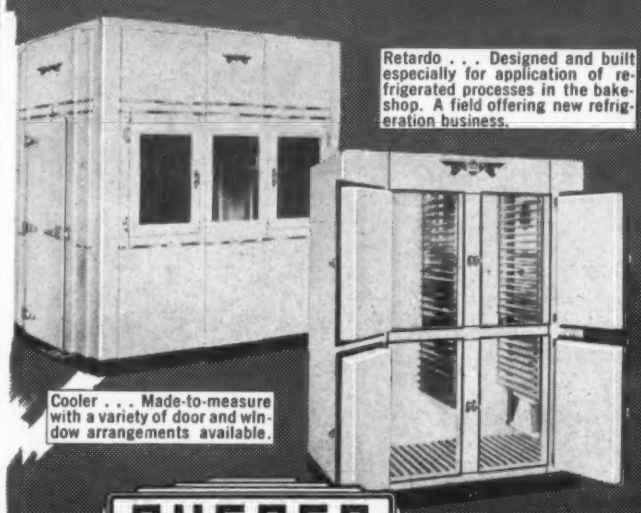


1400 Style... 1-shelf top display or double duty.

5600... Three-shelf display with storage base for delicatessen or general purpose use.

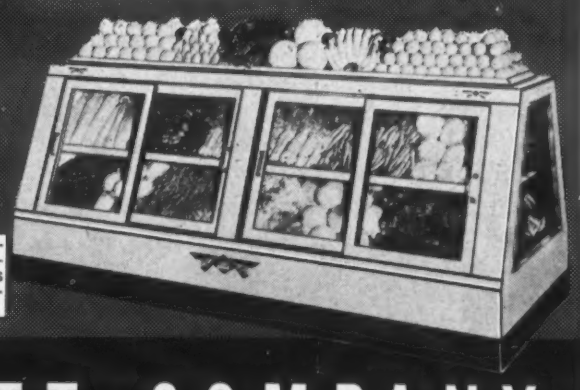


Retardo... Designed and built especially for application of refrigerated processes in the bakeshop. A field offering new refrigeration business.



Cooler... Made-to-measure with a variety of door and window arrangements available.

1200... Wall type refrigerator display for produce. The Vegetaire is needed in every food market.



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1300... Center store Vegetaire. Full vision... mass displays. 90% of the Vegetaires sold require separate condensing units.

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SPORLAN Controlled Performance VALVES

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QUESTIONS

Illuminated Signs For Frozen Foods Cabinet

No. 3342 (Distributor, New Hampshire)—"Can you tell us where we may obtain illuminated signs to be attached to ice cream cabinets, to convert them to frosted food chests?"

Answer: Parisian Novelty Co., Western Ave. at 35th St., Chicago, Ill.

'North Wind' Unit

No. 3343 (Manufacturer, Illinois)—"We would like to know the name and address of the manufacturer, presumably located in New York City, who is making the air-conditioning unit under the trade name 'North Wind.'"

Answer: Pleasantaire Corp., 1623 Connecticut, Washington, D. C.

Information Sought on Poultry Processing

No. 3344 (Distributor, Michigan)—"The writer recalls that in some previous issue or issues of the REFRIGERATION NEWS you have had several articles concerning plants processing poultry. If you have any of these past issues containing such articles, I would appreciate it if you would forward me a copy.

"If you do not, I would appreciate it if you could furnish me with the names and addresses of any such plants that are processing poultry in a large way."

Answer: We believe that the article you want is in the Aug. 17, 1938 issue, as it provides information on the different types of methods of processing poultry. Single copies of this issue are available at 20 cents each.

Combination Range And Refrigerator

No. 3345 (Distributor, New York)—"We are interested in procuring the name and address of a manufacturer of the following: A gas or electric range with sink and refrigerator in one combination."

Answer: There are two available types of range-sink refrigerator cabinets:

First, there is a small one-piece outfit which is manufactured by the Electric Invisible Kitchen, LaSalle Wacker building, Chicago, Ill., and the Parsons Co., 15000 Oakland St., Detroit, Mich.

The other type, a combination of standard size equipment is procurable either from the General Electric Co., Nela Park, Cleveland, Ohio or Westinghouse Electric & Mfg. Co., Mansfield, Ohio

Story Brings Inquiry

No. 3346 (Distributor, Ohio)—"In reviewing the October issue of the AIR CONDITIONING & REFRIGERATION NEWS, dated Oct. 26, Volume 25, No. 8, Serial No. 501; wish you would advise us as to the address of the Charles Q. Sherman Corp.

"We are interested in their frosted food window display case as described in the above stated copy."

Answer: Address Charles Q. Sherman Corp., 11 West 42nd St., New York, N. Y.

Address of Mr. 'Z'

No. 3347 (Engineer, Illinois)—"Please send me by return mail if at all possible the address of the National Frosted Foods, Inc., or the address where mail will reach Mr. M. T. Zarotschenzeff."

Answer: National Frosted Foods, Inc., 864 Washington St., New York, N. Y.

What the Specifications Book Includes

No. 3348 (Dealer, District of Columbia)—"Enclosed herewith please find check for $4.00 for subscription for one year. Please send us free, as per your offer, Buyer's Guide, Directory D-1.

"Regarding your 1936 Refrigeration & Air Conditioning Specifications Book, please advise us if this contains the specifications of all makes and models of refrigerators made prior to 1936 by all manufacturers. Please send us full description of this book which sells for $2.00 per copy."

Answer: The 1936 Refrigeration & Air Conditioning Specifications Book includes specifications of all makes and models of household and commerial refrigeration units through 1936. The data is incomplete for a few models of some makes, but on the whole, is very comprehensive.

The data given includes the bore, stroke, and speed of all makes of refrigeration units as well as data on the refrigerant charge, type of controls, and belt size.

The book is now available at the reduced price of $2.00.

The information for 1937 and 1938 has not yet been published.

Refrigerators For Use In Bakeries

No. 3349 (Distributor, Ohio)—"We are interested in contacting manufacturers of bakery retarding dough refrigerators. We understand that there is a refrigerator of this type sold under the trade name of Allen, that is being sold in Chicago.

"We also would like to have information on refrigerated bakery display cases."

Answer: Following are manufacturers of bakery retarding dough refrigerators:

Allen & Co., J. W.
116 N. Peoria St., Chicago, Ill.

Anheuser-Busch, Inc., St. Louis, Mo.
Cincinnati Butchers' Supply Corp.
1972 Central Ave., Cincinnati, Ohio
Cruse Refrigeration Co., Inc.
1012 E. Broadway, Louisville, Ky.
Ehrlich & Sons Mfg. Co., H.
Colorado & Lake Ave., St. Joseph, Mo.
Federal Store Equipment Co.
1010 W. St. Paul Ave., Milwaukee, Wis.
Fowler Equipment Co.
626 N. Highland Ave., Aurora, Ill.
Friedrich Sales Corp., Ed.
1117 E. Commerce St., San Antonio, Tex.
Herrick Refrigerator Co.
1019 Commercial St., Waterloo, Iowa
Hill & Co., Inc., C. V.
360 Pennington Ave., Trenton, N. J.
Holcomb & Hoke Mfg. Co.
1545 Van Buren St., Indianapolis, Ind.
Hussmann-Ligonier Co.
2401 N. Leffingwell Ave., St. Louis, Mo.
Koch Butchers' Supply Co.
600 E. 14th St., N. Kansas City, Mo.
McCray Refrigerator Co., Kendallville, Ind.
Minneapolis Show Case & Fixture Co.
1009 Washington Ave., S., Minneapolis
Orbesen & Co., 4846 Elston Ave., Chicago
Ottenheimer Bros., Inc.
1001 N. Montford Ave., Baltimore, Md.
Percival Co., C. L.
W. 11th & Cherry, Des Moines, Iowa
Puffer-Hubbard Mfg. Co.
2601 32nd Ave., Minneapolis, Minn.
Schmidt Co., C.
John & Livingston Sts., Cincinnati, Ohio
Seeger Refrigerator Co., Inc.
Arcade & Wells Sts., St. Paul, Minn.
Sherer-Gillett Co., Marshall, Mich.
Standard Refrigerator Co., Inc.
2539 Germantown Ave., Philadelphia, Pa.
Tyler Fixture Corp., Niles, Mich.
Viking Refrigerators, Inc.
7500 Wilson Ave., Kansas City, Mo.
Warren Co., Inc.
906 Fair St., S. E., Atlanta, Ga.
Weber Showcase & Fixture Co., Inc.
5700 Avalon Blvd., Los Angeles, Calif.
Wicke Mfg. Co., A. C.
414 E. 102nd St., New York, N. Y.

The following are manufacturers of refrigerated bakery display cases:

Cincinnati Butchers' Supply Corp.
1972 Central Ave., Cincinnati, Ohio
Fogel Refrigerator Co.
16th & Vine Sts., Philadelphia, Pa.
Gloekler Mfg. Co.
429 Fourth Ave., Pittsburgh, Pa.
Hill & Co., Inc., C. V.
360 Pennington Ave., Trenton, N. J.
Koch Butchers' Supply Co.
14th & Gentry, N. Kansas City, Mo.
Leitner & Co., M.
2322 Ogden Ave., Chicago, Ill.
Midwest Mfg. Co., Galesburg, Ill.
Ottenheimer Bros., Inc.
1001 N. Montford Ave., Baltimore, Md.
Percival Co., C. L.
W. 11th & Cherry Sts., Des Moines, Iowa
Schmidt Co., C.
John & Livingston Sts., Cincinnati, Ohio
Seeger Refrigerator Co.
850 Arcade St., St. Paul, Minn.
Sherer-Gillett Co., Marshall, Mich.
Tyler Fixture Corp., Niles, Mich.
Viking Refrigerators, Inc.
7500 Wilson Ave., Kansas City, Mo.
Weber Showcase & Fixture Co., Inc.
5700 Avalon Blvd., Los Angeles, Calif.

You will find this information plus a good deal more valuable data in the 1939 Refrigeration & Air Conditioning Directory, which is now going to press. This book, an up-to-the-minute buyer's guide, will be available in January, and will sell for only $1.00 per copy.

Bush Mfg. Co.

The Bush Mfg. Co. looks forward with pleasure to meeting old friends and making new friends at the Chicago Show, January 16th to 19th. We will show a full line of products in Booths 85 and 86 and trust you will make it a point to visit us.

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Engineering

Gossip of Women At Bridge Has Part In Electrolux Design

EVANSVILLE, Ind.—An informal bridge party, attended by 30 Evansville women, plays an important part in determining design and convenience features to be included in Servel Electrolux refrigerators.

Once each year, the 30-woman "jury" meets around bridge tables for a preview of what Servel artists and engineers have suggested for the design of the next year's models. So successful has been their work that the company has made them a permanent part of its research staff.

Before the women start their work, research and design departments of the company toil long and hard on advance plans for the new refrigerators. Preliminary design for the new unit is drawn by a commercial artist, and small models of the machine are built, incorporating the several mechanical features developed by research and design engineers.

Following tests of the miniature models, full-size units are built and tested. Then the 30 women are called in, by means of invitations to an afternoon bridge party at the home of a Servel official.

VIEW NEW MODELS

In one room, carefully screened off from the bridge-party scene, all the models of the proposed new Electrolux are on display. As the afternoon progresses, the women are asked out, two at a time, to look over the new refrigerators.

As they inspect the units, their comments and preferences in design and features are carefully recorded by a Servel official, who supervises the proceeding. After all have voted, results are tabulated to determine which model the women liked best. If two or more designs rank close together in popular choice, another similar party is held, with a new panel of guests. This procedure is repeated until the new model finally is decided upon.

The women's verdict, once obtained, is respected by the company. If they don't approve a certain feature, the company has found it good practice to change that feature until it suits them, no matter how perfect it already may be, from an engineering standpoint.

Women determine more than 90% of refrigerator sales, officials point out, and what they say goes. Many times men, approaching the problem from a different slant, overlook a tiny point which may assume great importance in a woman's eyes.

VERY ENLIGHTENING!

For example, women suggested that Servel engineers raise the level of the refrigerator's first shelf. The engineers wanted to know why; from a mathematical standpoint, the shelf was spaced exactly as other shelves.

"Why, if you'd raise it one inch," one woman said, "you'd be able to put in milk bottles."

"Oh," replied the engineer, meekly. He changed the design.

From its "jury" of women, Servel engineers have learned that the housewife will object to any feature that makes the refrigerator more difficult to clean, no matter how much it may enhance the unit's appearance.

But women will vote 100% for a feature which improves the beauty, if it doesn't interfere with cleaning convenience. They like rounded interior corners, because, besides looking neater, they make cleaning easier.

Servel's women "research experts" pass on every feature of the refrigerator, from exterior appearance and the design of handles to interior arrangement and size, arrangement of shelves, number and arrangement of ice cube trays, and other points.

"Women know what they want," explains W. S. Taylor, assistant research director. "They sometimes experience some difficulty in putting their desires into words, but, by careful questioning, our men can get it from them. The result is a better, more salable refrigerator.

"While it isn't all-important, the jury of women does keep engineers from going completely 'haywire' in bringing out a radical new design that won't sell."

Today's refrigerator not only must include new design and convenience features, but must, above all, be built to suit the housewife. The "jury" method is Servel's approach to the solution of this knotty problem.

Standards Adopted on Unit Accessories and Insulation of Rooms

WASHINGTON, D. C.—Equipment standards recently adopted by the Refrigerating Machinery Association include those for "Cold Storage Room Insulation," "Accessories Recommended for Base Units in Low-Pressure Condensing Units," "Freon-12 Condensers, Terminal Difference," and "Freon-12 Water Coolers, Mean Temperature Difference."

Following are the adopted standards:

The proper thickness of insulation for cold storage rooms, to maintain a given temperature economically, depends upon several factors such as:

(a) Character of the building—whether brick, stone, concrete, hollow tile, or frame.

(b) The thickness of walls, floors, and ceilings.

(c) Temperature to be maintained.

(d) Temperature of adjacent rooms or spaces.

(e) Climatic conditions.

(f) Cost of producing refrigeration.

(g) Purpose for which rooms are to be used.

Because of these factors, each installation must be considered on its own merits. Under average conditions, however, the thickness of insulation should not be less than that shown by the following tabulation:

°F. Room Temperature	Equivalent Thickness of Corkboard	Minimum Transmission Coefficient B.t.u./Sq. Ft./24 hr./° Temp. Diff.
—19° to —10°	8″	1.00
— 9° to — 5°	7″	1.14
— 4° to + 5°	6″	1.33
6° to 20°	5″	1.60
21° to 35°	4″	2.00
36° to 45°	3″	2.67
46° and over	2″	4.00

These recommended thicknesses are based on the assumption that the insulation is properly applied and remains in a reasonably dry condition over years of service.

It is considered good practice in the industry to base the ratings of Freon-12 shell and tube or shell and coil condensers on a terminal difference (temperature corresponding to Freon-12 pressure minus leaving water temperature) of between 8° F. and 15° F. The terminal difference should be that which can be obtained under usual operating conditions, assuming a commercially clean condenser reasonably free from non-condensable gases.

MEAN TEMPERATURE DIFFERENCE

The rating or design conditions for water coolers using Freon-12, or other low-pressure refrigerants with similar pressure characteristics, is dependent to some extent upon local conditions and requirements. However, for the usual installation, especially where water is being cooled for air-conditioning purposes, it is considered good practice to rate or design the cooler for a logarithmic mean temperature difference of between 10 and 15° F. The terminal difference (leaving water temperature minus evaporating temperature corresponding to pressure) should not be less than 5° F.

Accessories Recommended To Be Included In Base Units

	Air Cooled			Water Cooled			
Nominal Horsepower	⅛ to 1 incl.	1½, 2, 3	5	¼ to 1 incl.	1½, 2, 3	5 to 25 incl.	30 to 60 incl.
Condenser	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Receiver	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Motor	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Starting Equipment:							
Manual Fused Knife or Push Button	No			No			
Magnetic—Across Line Starter	No	Yes	Yes	No	Yes	Yes	Yes
Reduced Voltage Starter							
Thermal Overload Protection (Other than fuses)		Yes	Yes		Yes	Yes	Yes
High Pressure Cutout	No	No	No	Yes	Yes	Yes	Yes
Refrigerant Charge	*Yes	*Yes	*Holding	*Yes	*Yes	*Holding	*Holding
Oil Charge	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Low Pressure Control	Yes	Yes	Yes	Yes	Yes	Yes	No
Driers	No	No	No	No	No	No	No
Strainers (Suction Gas)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strainers (Liquid Refrigerant)	Yes	Yes	Yes	Yes	Yes	Yes	No
Service Valves on Compressor	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fusible Plugs or Relief Valve	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pressure Gauges and Board	No	No	No	No	No	No	Yes
Water Regulating Valve				Yes	Yes	Yes	Yes

*Refrigerant: Number of pounds in refrigerant charge (whether holding or complete) should be stated.

Moulding Data Issued

ELKHART, Ind.—Metal Forming Corp. has issued a catalog illustrating many of the mouldings it is equipped to produce for manufacturers in the refrigeration and other industries, as well as in the architectural and building trades.

In addition to rolled mouldings, the company can also supply welded steel tubing for commercial purposes in a wide range of sizes and gauges. Copies of the catalog are available from the company.

This *New* cup seal reduces waste ...KEEPS tubes clean and dry

THE bright, dry interiors of Anaconda Copper Refrigeration Tubes are preserved by closing each end with an inverted copper cup, which is sealed in place. (Pat. applied for.) *When roller cut directly back of the cup*, the piece to be discarded is materially smaller than the waste on the old crimped, soldered type.

Cup-sealed tubes are easier to handle. They can be bent or otherwise fabricated before the ends are cut off. They can also be fed through smaller openings without danger of fouling inside surfaces.

Cup-sealed Anaconda Copper Refrigeration Tubes are 99.9% pure copper, specially deoxidized to increase their corrosion resistance. Manufactured according to A.S.T.M. specifications B68-33, these high quality tubes are thoroughly dehydrated to assure *unusually bright, clean and dry inside surfaces*. These tubes are exceptionally soft—they bend easily, and can be flared without cracking.

Write for our new booklet on suggestions for bending, cutting and flaring Anaconda Refrigeration Tubes—it's chock full of helpful information. 59231

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Engineering

Tests Prove Importance of Proper Orifice Sizing In Thermostatic Valves, Hoesel Says

By A. F. Hoesel, Chief Engineer, Peerless of America, Inc.

In general, it may be stated that a thermostatically controlled expansion valve is practically an automatic expansion valve having a thermostatically charged power element comprising, in part, a bellows or diaphragm.

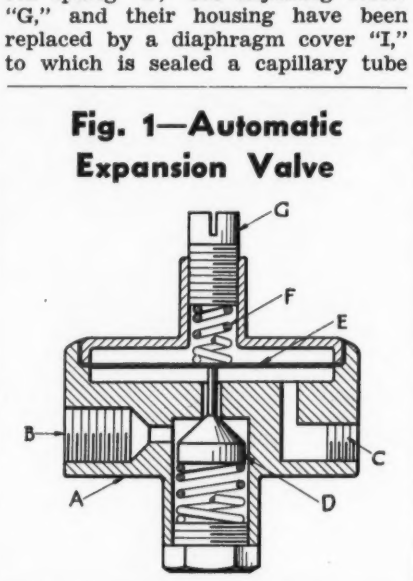
Fig. 1 is a diagrammatic representation, in cross-section, of an automatic expansion valve in which a body "A" has a refrigerant liquid inlet "B" and an expanded liquid refrigerant outlet "C."

Interposed between inlet "B" and outlet "C" is a valve "D," responsive to the movements of a diaphragm "E," which, loaded on its upper side by the spring "F," tends to maintain some given constant pressure, at the outlet "C," proportionate to the compression of the spring "F" by means of the adjusting screw "G."

This type of valve, when adjusted for a certain pressure, tends to maintain that pressure upon the under side of the diaphragm "E." If the pressure reduces slightly, the diaphragm "E" moves downward under the force of the spring "F." If the pressure increases slightly, the diaphragm "E" moves upward against the force of the spring "F."

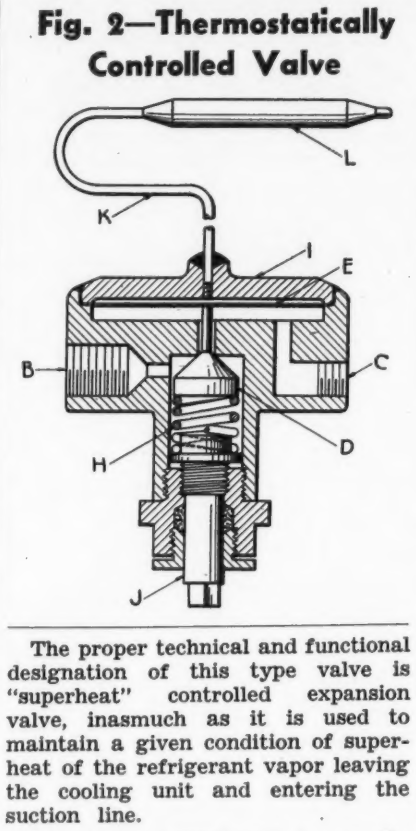
Fig. 2 is a diagrammatic representation, in cross-section, of a thermostatically controlled expansion valve made up of the automatic expansion valve, Fig. 1, except that the spring "F," the adjusting screw "G," and their housing have been replaced by a diaphragm cover "I," to which is sealed a capillary tube "K" having a temperature feeler bulb "L" sealed to its free end.

Fig. 1—Automatic Expansion Valve



The temperature feeler bulb "L," capillary tube "K," diaphragm cover "I," and the diaphragm "E" provide a closed system, which is usually charged with the same refrigerant as the particular valve will control, in order that its temperature-pressure characteristics will follow that of the controlled refrigerant.

Fig. 2—Thermostatically Controlled Valve



The proper technical and functional designation of this type valve is "superheat" controlled expansion valve, inasmuch as it is used to maintain a given condition of superheat of the refrigerant vapor leaving the cooling unit and entering the suction line.

The term "superheat" is usually a rather vague one to a service man, and it might be well to here state that "superheat" is any additional heat added after the liquid refrigerant is vaporized.

A cooling unit is generally operated at a lower temperature than its surrounding temperature, so let us consider a refrigerated compartment held at 35° F. with a cooling unit having a refrigerant temperature of 15° F. We shall assume this cooling unit to have 100 feet of refrigerant tubing.

If we feed refrigerant liquid to this cooling unit in such quantity that the final trickle of liquid reaches to 90 feet, we would find that up to 90 feet, the temperature of the refrigerant in both its liquid and vapor state would be 15° F.

During the last 10 feet, between the 90 and 100-foot end of the tubing, the room temperature of 35° F. is putting heat into the vapor and, if we had a thermometer at the 90-foot point, reading 15° F., we would find that a thermometer at the 100-foot point would read, say, 25° F.

Under this condition, we would have what is termed a 10° F. superheat of the refrigerant vapor leaving the cooling unit.

If we install upon such a cooling unit an automatic expansion valve such as shown in Fig. 1, and adjust it so that the above given conditions are duplicated, we would find that at a greater than 35° F. compartment temperature, less than 90 feet of the tubing would furnish effective refrigeration, and the vapor at the outlet would have a correspondingly greater superheat.

If the compartment temperature would drop below 35° F., more than 90 feet of the tubing would furnish effective refrigeration, but the superheat would be correspondingly reduced and eventually unvaporized refrigerant would be leaving the cooling unit, entering the suction line, and producing frost backs.

Furthermore, since the capacity of the system is based upon the 20° F. temperature difference between the 35° F. compartment temperature and 15° F. cooling unit refrigerant temperature, we would find that the cooling unit refrigerant temperature would always be 15° F., while the compartment temperature might drop.

Under this condition, we find that no matter how long the system is in operation, no matter how large the cooling unit, and no matter how large the compressor, it is impossible to get compartment temperatures as low as 15° since the cooling unit itself is always at 15° F. refrigerant temperature.

Of course, if we kept continually adjusting this automatic expansion valve in order to reduce the expanded refrigerant pressure and consequently its temperature as the compartment temperature dropped, we could maintain the system at its maximum efficiency. This is exactly what the thermostatically charged power element does when added to an automatic expansion valve body assembly.

While a thermostatically controlled expansion valve controls superheat, it does so indirectly by means of the thermal fluid pressure, responsive to the temperature of the temperature feeler bulb, tending to move diaphragm "E" downward, while the expanded refrigerant pressure, plus the force of the adjustable spring "H," tends to move the diaphragm upward.

The interplay of these tendencies produces movements of the valve "D," thereby feeding refrigerant liquids in such quantity as to maintain the given superheat for which spring "H" is adjusted.

In a theoretical analysis of the forces producing movement of the diaphragm "E" (namely, the spring "F" tending to push the diaphragm downward, and expanded refrigerant pressure tending to push the diaphragm upward), we find that these forces act without any time lag.

Fig. 3—Orifice Cartridge

In other words, the diaphragm is immediately affected by any variation which might occur in the expanded refrigerant pressure. Because of the immediate responsiveness of the diaphragm "E," it is unnecessary to use valve orifice sizes having capacities only slightly above the maximum vaporizing capacity of the cooling unit, to which such automatic expansion valve is connected, in order to make the valve operate without wide variation in refrigerant feed.

This conclusion, theoretically arrived at, was substantiated by successfully operating an automatic expansion valve of 10-ton capacity on a refrigerating system of approximately ⅛-ton capacity. Under this condition, the automatic expansion valve was operating only at one-sixtieth of its potential capacity.

Now, it is well known that in some installations thermostatically controlled expansion valves have a tendency to operate upon what is termed a "hunting" cycle. When a valve hunts, it periodically overfeeds and underfeeds refrigerant liquid to the cooling unit.

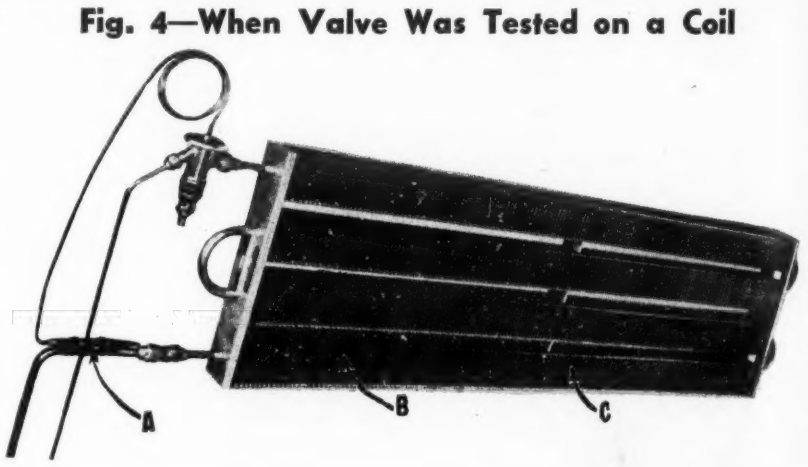
This results in periodic frost backs, reduces the refrigerating capacity of the system and increases power bills. A hunting cycle can be readily detected, especially on a single installation, by wide variations in suction pressure during the compressor on-time cycle.

Realizing the ill effects of "hunting," it was decided to trace its cause. Therefore, we used a single installation upon which we installed numerous valves of widely differing capacities. Half of the valves had needle type seats which, for capacity, were duplicated by ball type seats in the remainder.

The results of these tests proved that, at equal capacity, it made no difference (regarding "hunting") whether the valve seat was of the needle or ball type. However, it was definitely proven that, if the maximum flow rate of refrigerant liquid through the valve was limited to less than twice the vaporizing capacity of

(Concluded on Page 37, Column 1)

Fig. 4—When Valve Was Tested on a Coil



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HIGHSIDE CHEMICALS COMPANY
Newark, New Jersey

Orifice Sizing Is Called Vital To Valve Work

(Concluded from Page 36, Column 5)

the cooling unit, hunting was practically eliminated.

During these tests, it became questionable as to whether or not there might be slight operating differences as between one valve and another . . . which differences might have some bearing on the results obtained.

Concluding that it would be advisable to have a single valve, the flow capacity of which could be widely varied without dis-assembly, the present form of Peerless orifice cartridge was finally evolved.

Fig. 3 illustrates the Peerless orifice cartridge. The cartridge body is a deep drawn copper shell having an integral annualar flange, which provides the gasket seat for the refrigerant liquid strainer. At its upper end, inwardly flanged, is pressed a stainless steel disc having a central orifice.

The refrigerant liquid strainer is inserted into the orifice cartridge, and the assembly then inserted into the thermal valve inlet. Tightening up on the liquid line flare nut then results in a leak-proof joint exactly the same as in conventional valves having slip-in strainers.

The theory behind the application of the Peerless orifice cartridge is based upon the fact that a given sized orifice will, for a given pressure difference, pass some certain maximum amount of refrigerant liquid within a given time. The smaller the orifice, the less liquid passed through; and, conversely, the larger the orifice, the more liquid passed through.

We now had a thermostatically controlled expansion valve, which, by the insertion of different orifice cartridges, could be greatly varied in maximum flow rate.

In an actual test on the coil, Fig. 4, it was found that, when using a valve orifice of too large a size, only four seconds elapsed from the time that liquid refrigerant reached point "C" till unvaporized liquid reached to the bulb positon "A." At the time that liquid refrigerant reached point "B," the thermal bulb was at a 20° F. higher temperature.

It is obvious that since the valve was adjusted for 10° F. superheat, the bulb could not drop 10° F. in temperature within the few seconds before unvaporized liquid passed into the suction line. Therefore, this valve was operating on a continuous "Hunting" cycle, and the suction line periodically frosted and defrosted.

Using the proper sized orifice, it was found that it took 11 seconds from the time that liquid refrigerant reached point "C" 'till liquid refrigerant reached point "B." During this time, the temperature of the suction line and bulb, at "A," gradually dropped and modulated the flow of refrigerant into the coil; whereby the 10° F. superheat, picked up between points "A" and "B," was steadily maintained and the system operated under maximum efficiency.

Koch Adds New Models To Line & Puts Patented Features on All Units

NORTH KANSAS CITY, Mo.—New Koch models for 1939 in refrigerated display cases, beverage coolers, reach-in refrigerators, and dough retarder units were shown to some 20 executives and district field supervisors of the Koch Refrigerators organization during a convention in the firm's offices here Jan. 4-6.

The three-day meeting was in charge of H. R. Lorsch, general sales supervisor, and was attended by all department heads and executives of the company. Field supervisors present were C. B. Kehoe, representing the southeast; W. G. Kay, the east and northeast; R. B. Prentice, from the Chicago district; T. U. Cowger, southwestern representative; and C. W. Hulse, west coast.

Inspection and demonstration of new models under the direction of Clarence Masters, factory superintendent, opened the convention. This was followed by a tour of the two Koch factories. Business sessions began the first afternoon, and continued all through the following day.

Millard Mayer, president, was chairman of the banquet on the evening of Jan. 5 in the Muehlbach hotel, honoring the field supervisors. A tour of Koch installations in the two Kansas Cities took up the morning of the meeting's last day, and the afternoon was occupied with individual conferences with executives and department heads.

'SUPER-MARKET' CASE

New models introduced at the supervisors' meeting included a welded-steel top display case with a 32-inch wide display shelf, designed especially for use in chain stores and super-markets. The unit is 48 inches high, and is said to combine features achieving unusual display and ease of operation.

A fish case to match also is included in the new line. Both cases are available with either Dulux or porcelain exterior finish.

Two new models of the Koch "Zerostream" beverage coolers, for use under bars, also were announced at the meeting. These are similar in interior arrangement and coiling to the bar-height beverage cooler, but are designed as part of the working equipment under bars. They are made in 16 and 27-case capacities.

'MIRAFLEX' IN ALL

Patented Koch "Miraflex" coiling system, heretofore available only in higher priced models, this year has been extended to cover the entire display case line, including the popular-priced "Econ-O-Case" models, it was announced at the meeting.

Coiling system has been refined and improved to give even greater efficiency, it was announced. Because of their unusual arrangement and design, "Miraflex" coils will speed up circulation almost 80% over any other type of display case fin coil system, Koch engineers claim.

Econ-O-Case models this year also will carry 4 inches of insulation instead of 3 inches as in the past, it was announced. This insulation is installed in four 1-inch layers.

Another new Koch development is a "Lumitron" non-glare lighting system, incorporated in all display cases.

Other display case features include storage compartment lights as standard in all models, including the Econ-O-Case; wider molded rubber doors, sliding on hard rubber tracks, in the latter models, and three thicknesses of glass in Econ-O-Case doors.

All steel models also are equipped with a new design adjustable scale rest, and removable wrapping and slicing shelves.

An entirely new model, the American Royal, was announced at the meeting. Of welded-steel construction, it has an all-porcelain exterior, porcelain lined display compartment, and stainless steel lined storage compartment. It is equipped with an adjustable shelf, which can be altered both as to height and tilt.

A new line of refrigerators for bakers, with an improved forced-air cooling system, also was announced. In addition to the two models in last year's line, a third and larger unit, with a capacity of 84 trays, was shown.

Reach-in refrigerators now are available with either Dulux or porcelain exterior and interior, it was announced. Units in this series are equipped with a Koch-developed panel-type forced-air system. Series 460 is available with an ice maker instead of the forced-air system, if desired.

A Sales Manager Primes His Guns

Clarence Masters, Koch Refrigerator company superintendent, explains the "Lumitron" non-glare lighting system in a 1939 Koch display case to H. R. Lorsch, general sales supervisor, during the meeting of Koch field sales supervisors held last week in North Kansas City, Mo.

Fedders Will Introduce 'Cabinet' Valve Line

BUFFALO—Included in the products which Fedders Mfg. Co. will introduce to the trade at the All-Industry Refrigeration and Air Conditioning Exhibition Jan. 16-19 is a new line of adjustable and non-adjustable thermostatic expansion valves, especially designed for cabinet installations.

Easy, sensitive adjustment is provided on model 381 valve by removing the cap nut, and making the adjustment on the adjusting stem with an ordinary wrench. Model 382 is non-adjustable. Set for 10° superheat, this model is designed to provide tamperproof installations for standard conditions of operation.

Rustless stainless steel power element housing is designed to protect working parts. The housing is removable for changing the power element bellows and tube assembly, in the shop or out on the job.

Valve body is made of drop forged brass, and is said to eliminate all possibility of seepage leaks.

Bellows area has been increased 60% to provide more sensitive response to temperature changes. New small diameter feeler tube also is said to contribute to sensitivity. Power element bellows and tube has high vapor charge, which is said to assure positive operation over the entire range of working temperatures.

All parts, including adjustment, power element, needle, and seat, are readily accessible. Needle and seat are visible through outlet opening.

For Information on Motors
FOR ALL TYPES OF
Air Conditioning and Refrigeration Equipment
WRITE TO
Wagner Electric Corporation
6400 PLYMOUTH AVE. ST. LOUIS, MO.

SWIFT FANS

A Fan Blade for Every Purpose

V-Type Cast-Iron Pulleys
Standard or made to specifications
Write for Illustrated Circular
Swift Manufacturing Co.
247 McDougall Detroit, Mich.

"Fair" Weather BY BAKER
AT THE TERRACE CLUB, NEW YORK WORLD'S FAIR

Only the most efficient and dependable equipment was acceptable for the luxurious Terrace Club at the New York World's Fair—yet economical operation was essential, too. Naturally, BAKER System Air Conditioning was selected to maintain spring-like temperatures inside the Club building, no matter how high the mercury soars outside. Take a tip from the Terrace Club, and specify dependable, economical BAKER air conditioning and refrigeration equipment for every commercial and industrial purpose.

BAKER ICE MACHINE COMPANY, INC.
1506 Evans Street Omaha, Nebraska
Branch Factories: Fort Worth, Los Angeles, Seattle
Eastern Sales: New York Central Sales: Chicago
Sales and Service in All Principal Cities
AUTHORITY ON MECHANICAL COOLING FOR OVER 30 YEARS

FLOOR TYPE UNIT COOLERS - by Marlo

Self-contained. Self-defrosting. Specially designed for Locker Storage Rooms, Marlo Unit Coolers may be used in any refrigerator—

For room temperatures 35 degrees and up, water is sprayed over the coil for defrosting.

For room temperatures 5 degrees to 35 degrees, salt or calcium chloride is used for brine mixture for defrosting coil.

For room temperatures below plus 5 degrees, calcium chloride or any other low temperature brine solution may be used for defrosting coil.

For cold storage rooms where temperatures and moisture conditions make defrosting a problem.

Write for new Bulletin 393, and prices
MARLO COIL CO., 6135 Manchester Ave., St. Louis, Mo.
Manufacturers of Complete Line of Low Side Equipment X-1

LET'S BE Logical ABOUT VALVES AND MOISTURE!

Let's reason from the facts. You can check these three basic facts for accuracy: (1) Every dealer finds it necessary to service moisture-clogged valves. (2) Despite the most careful baking and assembly, moisture remains in a certain number of units. (3) Every service call for clogged valves means the danger of good will lost, through no fault of dealer or maker.

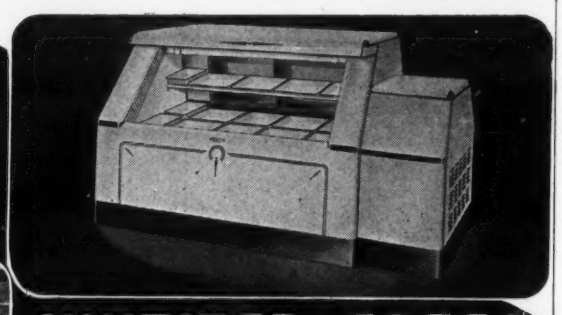
This risk is preventable. A cartridge of Alorco Activated Alumina, *built into* the mechanism, adsorbs moisture and forestalls trouble. Cartridges of Activated Alumina have proved dependable in service work, and equally so as *permanent* parts of certain units. Isn't it logic to *build in* the cartridge, so Mrs. Unmechanical Owner won't say, at her bridge club, "I've been having trouble with my Thingamabob Refrigerator?" ALUMINUM ORE COMPANY.

(*Sales Agent*: ALUMINUM COMPANY OF AMERICA, 1908 Gulf Building, Pittsburgh, Pennsylvania.)

ALORCO
ACTIVATED ALUMINA
PREVENTS CLOGGED REFRIGERATOR VALVES

THE BUYER'S GUIDE

The NEW Percival NO. 1000



UNITIZED CASE! With Refrigerating Unit!

DISTRIBUTORS WANTED

Write for descriptive literature of entire Percival line. Meets every requirement of the modern food store.

Special low prices to responsible Distributors able to finance their own sales.

FACTORY INSTALLED . . . FACTORY TESTED READY TO OPERATE ON ARRIVAL

Note these superior features . . . balanced refrigeration . . . temperature control . . . controlled high humidity . . . genuine porcelain finish . . . corkboard insulation . . . abundant storage space . . . magnetic display . . . no-sweat front glass . . . three-way service cabinet with scale stand, wrapping counter and paper roller, and unit housing.

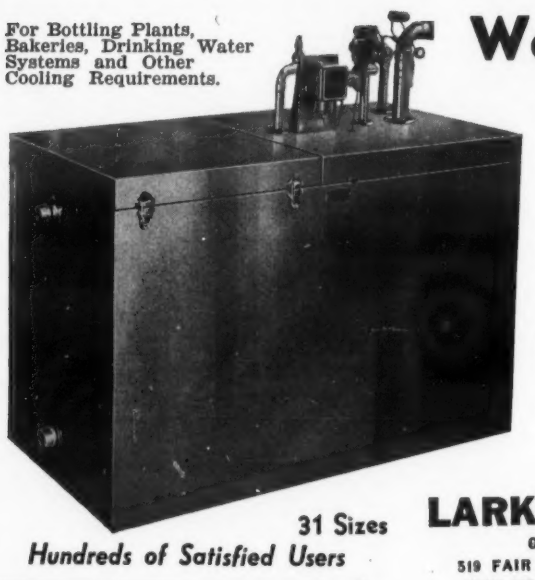
The Percival Unitized Case is built to the high standard of all Percival equipment. Due to its popularity and volume production, it is offered at an extremely attractive price.

53 Years of Service 1886-1939

C. L. PERCIVAL COMPANY DES MOINES IOWA

LARKIN COILS Instantaneous

For Bottling Plants, Bakeries, Drinking Water Systems and Other Cooling Requirements.



Water Coolers will increase your profits...

when you sell these coolers, your customers stay sold and satisfied!

Read what a Florida distributor says " . . . every cooler that I have sold this year is giving satisfaction in every way. . . ."

write today for complete engineering and sales data

Built only by

31 Sizes

Hundreds of Satisfied Users →

LARKIN COILS, INC.

General Office and Factory

519 FAIR STREET, S. E., ATLANTA, GA.

NEW YORK FACTORY, 102 FIFTH AVE.

ACME INDUSTRIES INCORPORATED

JACKSON MICHIGAN

YOU SHOULD SEE OUR DISPLAY AT ALL-INDUSTRY EXHIBITION IN CHICAGO, JANUARY 16-19

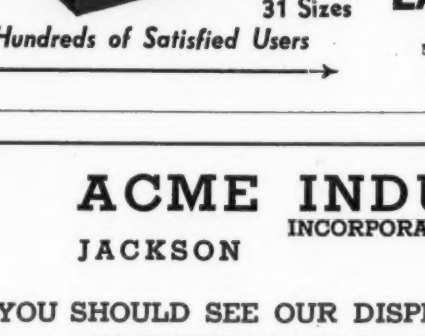
A few desirable territories are open to manufacturers agents or special representatives. Discuss them with us at the convention.

COME AND SEE US, TOO -

When You Visit The ALL INDUSTRY EXHIBITION,

Stevens Hotel,

CHICAGO



THE HARRY ALTER CO.

1728 S. Michigan Avenue, Chicago, Illinois

3 CHICAGO BRANCHES – NORTH, WEST, SOUTH

NEW YORK 161-161 Grand St. CLEVELAND 4506 Prospect Ave. ST. LOUIS 2910 Washington Ave.

Frigidaire To Carry '39 Story To Dealers

(Concluded from Page 1, Column 3)

been available up to the present time. Rumor has it that a real innovation is in the Frigidaire program for 1939.

"Complete information will be revealed at the several conventions," said F. R. Pierce, manager of household division, "but for the present, it is probably sufficient to say that in 1939 we expect to introduce something entirely new.

"I am not referring to any kind of mechanical gadget, but rather to a forward step in the field of food preservation."

Heading the respective crews as leader and master of ceremonies for the convention program will be: Lee A. Clark, household advertising and sales promotion manager; H. J. Walker, Jr., manager, public utilities division; and Elsworth Gilbert, zone manager and general convention director.

A total of 39 men will comprise the three groups, all of whom are members of the Frigidaire organization.

Seeger and Harwood Get Promotions

(Concluded from Page 1, Column 1)

engineering departments, becoming assistant chief engineer in 1928.

In addition, he is author of several articles on the control of electric motors, and holds a large number of patents on various types of controls.

Mr. Harwood entered Cutler-Hammer's training course in 1917, after having been graduated from Carnegie Institute of Technology. Soon he was transferred to the engineering department, where he spent several years as a designing engineer. In 1923 he was made supervisor of the steel mill control division, and in 1928 was made general supervisor of the engineering department. From 1934 to 1936 he worked on the development of propulsion control for submarines.

THE COLD CANVASS

By B. T. Umor

(Concluded from Page 1, Column 1)

murder session, they have made plans to collect and store blood as the precious fuel of conquest.

Human blood stored at a temperature just above freezing remains fresh and good. Special refrigerators will keep the blood ready for use. In the Spanish civil war the plan is already in use.

Every country is planning refrigerated blood depots and they will no doubt have much to do in deciding the dubious victor of the next war. Rather significant that "cold blood" will be war's most potent weapon.

* * *

Night Club Air

Bugs Baer recalls that the first time he saw singer Helen Morgan was in a night club where the only air was inside the bass drum. Comes air conditioning and the hottest torch singer's most torrid notes can't disturb the comfort of the air-cooled patrons. Ah there, progress!

CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, $2.00, additional words four cents each. Three consecutive insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning & Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

SALESMEN WANTED by refrigerator manufacturer. Men selected must qualify as field representatives to call on distributors and direct factory dealers. Exceptional opportunity for advancement and permanent connection for energetic producers. Replies confidentially treated if you desire. Box 1102, Air Conditioning & Refrigeration News.

MANUFACTURER of refrigerator display cases in the Pittsburgh area desires to fill position of sales manager. Sales are made through dealer organizations operating in Maryland, Pennsylvania, Ohio and West Virginia. Person must be capable of assisting dealers in closing sales. Give details, experience, contacts and remuneration expected. Box 1105, Air Conditioning & Refrigeration News.

VALVE DESIGN Engineer: Capable of guiding development of solenoid valves and other types for commercial refrigeration and air conditioning. Must have current background in valves, covering design. Knowledge of market and competitive conditions desirable. Please do not answer this ad unless you have these definite qualifications. Responsible manufacturer entering this field offers unusual opportunity. State age, salary and experience. Please be brief and to the point. Our own men know of this advertisement. Box 1110, Air Conditioning & Refrigeration News.

FACTORY FIELD Service Representative. We want a man, preferably with refrigeration experience, who has contacted, organized, trained and supervised distributors and dealers on service for manufacturer. No others considered. Prefer native of or man experienced in Southern or Southwestern States. Give complete information and sell yourself in first letter. Box 1112, Air Conditioning & Refrigeration News.

REPRESENTATIVES WANTED

MANUFACTURER'S REPRESENTATIVE wanted with commercial refrigeration experience to cover western Pennsylvania, Ohio, and Indiana, to contact dealers and distributors. Representative will have largest and most complete line of milk cooling equipment manufactured; also, cold storage rooms, ice makers, et cetera. Address all inquiries to WILSON CABINET CORPORATION, Smyrna, Delaware.

POSITIONS WANTED

EXECUTIVE SALES position. Employed but desire change. Eleven years' experience merchandising major and small appliances in northwest, southwest and central west. Married, 40, college graduate. Capable of contacting distributors and dealers. Sales education and promotion experience. Can furnish bond. Full record including references and accomplishments to interested manufacturer or distributor. Box 1104, Air Conditioning & Refrigeration News.

FACTORY REPRESENTATIVE, graduate air conditioning and refrigeration engineer, experienced in repairing, servicing, installing and designing heating, air conditioning and refrigeration equipment. Seeks connection with reliable manufacturer. Not married, willing to travel anywhere. Thoroughly familiar with middle western and Mississippi Valley States. Reliable reference on request. Box 1109, Air Conditioning & Refrigeration News.

GRADUATE of Refrigeration & Air Conditioning Institute desires position with contractor or dealer in eastern U. S. installing air conditioning equipment. Six years' electrical experience. A. B. physics, mathematics, engineering drawing. At present employed, electrician, including servicing commercial refrigeration machines. Married. Excellent references. Box 1111, Air Conditioning & Refrigeration News.

RESEARCH AND development engineer on household and commercial. Fourteen years' experience. Capable of taking responsibility or working alone. All past employers as references. Positions held were—assistant chief engineer; charge of laboratory; research and new development; and manufacturing follow-up. Also experience in European and American field promotion and service. Box 1113, Air Conditioning & Refrigeration News.

R.A.C.I., CHICAGO, graduate with diploma and shop experience wants position with shop or service company. Installation or plant operator. Commercial engineering in northwest. Age 39, family. Good appearance, personality, dependable, live wire, willing to sacrifice for future advancements. Reference or personal interview. L. R. TREADWELL, Box 397, Craigmont, Idaho.

EQUIPMENT FOR SALE

COMMERCIAL TRAILER for sale, equipped with electric brakes, fitted up for complete jobber's display. Perfect condition. All steel construction. THE F. H. LANGSENKAMP CO., 229 E. South St., Indianapolis.

DEALERS AND SERVICEMEN—Offering Kelvinators, General Electrics, Westinghouses, Frigidaires, as is, as low as $8.00 each, guaranteed fully equipped. Frigidaire compressor units, all sizes, guaranteed in perfect condition. We have brand new boxes, all makes, at below dealers' prices. Write for prices! LANDOR WAREHOUSE, INC., 53 East 10th Street, New York City.

REPAIR SERVICE

GENERAL ELECTRIC and Westinghouse hermetic units rebuilt. Guaranteed unconditionally for one year and returned to you finished like new. Units are entirely disassembled in our large modern shop, tested through every step of production during rebuilding with the most complete test equipment for accurate work, then subjected to exhaustive running tests under actual operating conditions. Each unit measures to exacting standards after rebuilding. Prices $30.00 on General Electric DR-1, DR-2, and Westinghouse; $35.00 on General Electric DR-3. Quotations furnished on other models. Quick service — guaranteed work. REFRIGERATION MAINTENANCE CORP., 321-27 East Grand Ave., Chicago.

SERVEL HERMETIC units burned or stuck completely rebuilt $22.50. Unconditionally guaranteed for 12 months. Most complete shop in Northwest. Same location for 10 years. Write for information regarding other hermetic units. Also carry parts for 14 nationally known refrigerators. Compressors for exchange. Dun & Bradstreet, 1st National Bank, references. REFRIGERATOR SERVICE CORPORATION, 1121-23 S. 7th St., Minneapolis, Minn.

CONTROL REPAIR service. Your controls repaired by expert mechanics, with special precision equipment. Supervised by graduate engineers. We stress perfection and dependability before price. One year guarantee on domestic controls. Any bellows operated device repaired. HALECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

DOMESTIC CONTROLS repaired: Ranco pencil $1.75, Ranco box $2.00, General Electric $2.00, Tag $2.00, Cutler-Hammer $2.00, Penn $2.00, Bishop Babcock, $2.50, Majestic $2.50, Penn magnetic $2.50, G. E. Frigidaire $2.50. In business over 20 years. Our name is our guarantee. UNITED SPEEDOMETER REPAIR CO., INC., 342 West 70th Street, New York City.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER ((ASRE)), Patent Attorney, 342 Madison Avenue, New York City.

Stokol Opens New Retail Dept. In Indianapolis

INDIANAPOLIS — Stokol, retail division of Schwitzer-Cummins Co., has opened a new retail department at 1725 N. Meridan St. Vernon Miller is branch manager; E. J. Oliver, sales manager; J. R. Brundage, sales engineer; M. O. Jones, sales engineer; and Joe Pollard, service manager.

"Ranco? YES SIR!"

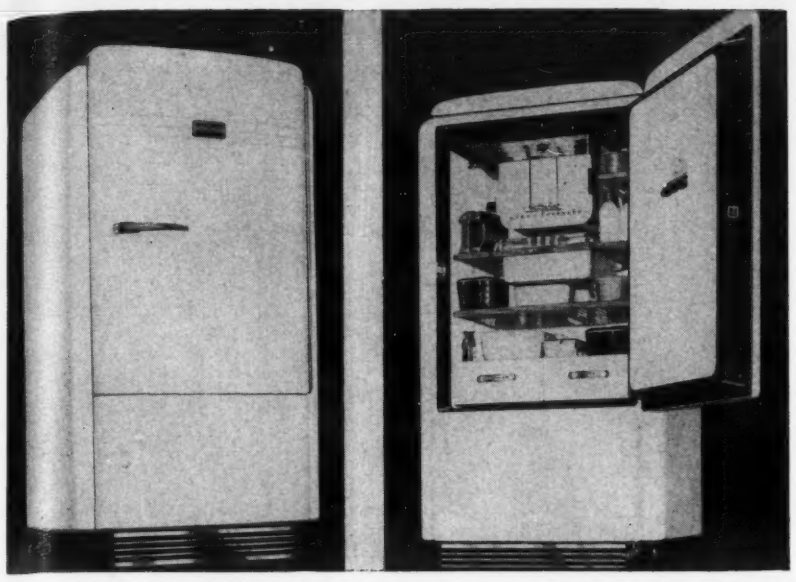
We'll all be in Chicago January 16th to 19th at the ALL INDUSTRY EXHIBITION! . . . BOOTHS 106 and 107, HOTEL STEVENS.

See Ranco's line of Household Controls as well as the NEW TYPE "G" Commercial Controls.

A Regular Ranco Welcome Awaits You!

RANCO COMMERCIAL CONTROLS

Hotpoint Line Built For All-Electric Kitchen



Built to fit into the all-electric kitchen are Hotpoint's 1939 electric refrigerators, with new features including a six-way cold storage compartment under the evaporator, removable evaporator shelf, separate fitted fruit and vegetable storage containers, oven crockery set, and "pop-out" ice trays.

New Hotpoint Units Have Meat Storage Chest

(Concluded from Page 1, Column 4)

within 1¼ inches of the wall, the refrigerators will not protrude beyond adjoining cabinets or appliances, it is said.

All hardware is chromium plated; door handles operate at a finger touch, and are designed to avoid catching loose sleeves that may brush against them. Grilles at the base of Deluxe and Imperial models add to beauty, and permit the entrance of cooling air.

Bonderized all-steel cabinets are finished in baked Calgloss with acid-resistant porcelain interiors, except Imperial models, which are porcelain inside and out. Cabinets are insulated with Thermocraft.

Hotpoint's "five zones of cold" are designed to give correct temperatures for every refrigerator use. The stainless steel "Speed Freezer" itself is finished in baked Calgloss, with rounded corners for easy cleaning. In most models a new two quart dessert tray is an added feature.

Handy "Pop-Ice" trays offering the convenience and simplicity of "two cubes or 20," this year are included in all but the Special model. A new three-way release lever hangs in its own rack just inside the cabinet. It may be used as: tray release, ice cube release, or bottle opener.

Some models have removable shelves in the evaporator to make room for a carton of ice cream or frozen foods.

Six-way "cold storage" compartment is located directly beneath the evaporator, where temperatures are lowest. Lower portion is a spacious enameled pan which will accommodate large quantities of meat, fowl, or other foods. A large, heavy glass defrosting tray forms the upper portion, which may be used for storage, as well as a cover for the pan.

Gliding shelves have been redesigned for 1939, with new Textolite supports and safety catch. Rubber bumpers prevent noise and interior marring as shelves are slid in and out.

Fruit and vegetable storage section this year has two distinct containers. One, labeled "fruits," is a wire basket for storing oranges, lemons, and other fruits or vegetables having protective outer skins. The other, labeled "vegetables," is entirely of porcelain enamel, for keeping perishable vegetables crisp and fresh.

Hotpoint's vacuum-sealed Thriftmaster unit again utilizes forced-draft cooling, a successful feature last year.

Automatic motor protection is another feature. In case of a line surge, the Thriftmaster will stop, and automatically resume operation when current returns to normal.

An individual accessory feature is the seven-piece, oven-proof crockery set, designed and made especially for Hotpoint. Each piece is a different harmonizing hue.

Pierson and Venable Head Standard Range

TOLEDO—Charles A. Pierson was elected president of Standard Electric Mfg. Corp. at the recent annual stockholders meeting. The company this year begins its twenty-seventh year as a manufacturer of electric ranges and heating devices.

Other officers elected were: H. H. Venable, vice president and general sales manager; V. K. Perkins, vice president; and E. L. Tait, secretary-treasurer.

Service Men Augment Chicago Meetings

(Concluded from Page 1, Column 5)

by Willis Stafford, Aurora, Ill., member of the board of directors of both the Illinois association at the national society.

"Chapter Management," by B. E. Seamon, secretary of the Chicago section of American Society of Refrigerating Engineers.

"What the National Society Can Do to Assist its Chapters," by H. T. McDermott, national secretary of R.S.E.S.

"Financing Chapter Activities," by Richard M. McClure, executive secretary of Refrigeration Supplies & Parts Manufacturers Association.

At a "presidents' luncheon" that noon, the Illinois association will honor the presidents of three national associations closely affiliated or interested in the success of service engineers. Guests will include Claude A. Brunton, new national president of R.S.E.S.; Henry W. Merkel, president of the National Refrigeration Supply Jobbers Association, and J. D. Coyler, president of the parts manufacturers association.

Interesting educational program has been planned for the afternoon session of the conference.

Mr. Brunton will make his first appearance as national president before a national audience from his industry, his topic being "The National Society and Its Program for 1939."

R. L. Tyler, of the Tyler Fixture Co., will deliver "A Merchandising Message," and E. W. McGovern, of the R. & H. Chemicals Dept. of E. I. du Pont de Nemours & Co., will speak on "Dehydrants and Their Use," a topic on which he is generally recognized as an authority.

"Principles of Successful Management in a Refrigeration Service Business" will be outlined by Walter McCarty, of Dressen & McCarty, River Forest, Ill. In a comparatively short period of years, this firm has built up an outstandingly successful business in this field, and Mr. McCarty will tell how it was done.

Closing the educational program will be the film, "Silver Millions," shown through courtesy of American Can Co.

Rounding out the day, members of the organization and their guests will attend a cabaret style party that evening in the Boulevard Room of the Stevens.

Preview For Next Week

Many manufacturers are planing to show new products at the all-industry show in Chicago. Here W. W. Meyer, Rotary Seal Co. vice president, holds a new seal which will be introduced.

THE BUYER'S GUIDE

Four Years AHEAD OF THE FIELD

● FOUR YEARS ago Tyler originated its unique *WELDED STEEL* construction for commercial refrigerators. Now other makes are following. But Tyler still *leads* with new improvements and bigger values. Wide range of—Top Display... Double Duty... Delicatessen Cases... Reach-Ins... Walk-Ins. Sparkling streamlined beauty. Latest engineering advancements. Write today for dealer catalog.

TYLER FIXTURE CORPORATION
DEPT. E, NILES, MICHIGAN
NEW YORK OFFICE: 601 W. 26th ST.
BOSTON OFFICE: 683 BEACON ST.
CHICAGO OFFICE: 1643 W. OGDEN AVE.

TYLER WELDED STEEL Refrigerators

Chieftain Message No. 22

MANUFACTURERS—

Smart merchandisers will specify a "Tecumseh Hermetic." Of course there are *good reasons!*

TECUMSEH PRODUCTS CO., TECUMSEH, MICH.

QUALITY . . . THROUGH AND THROUGH

Equipped with Famous Fogel Lifetime Vision

Perfection of materials and workmanship are of supreme importance in Fogel construction.

We insist that every Fogel case must have **lasting outward beauty,** and **solid quality between the walls.**

Inquire today about our full line of refrigerated food storage and display equipment. Interesting distributor proposition to qualified firms.

FOGEL • REFRIGERATOR COMPANY 16th & Vine Sts., Phila., Pa. • SINCE 1899

AMINCO PRODUCTS
are on display at the
All-Industry Show
STEVENS HOTEL, CHICAGO
JANUARY 16 - 19
You are cordially invited to see our exhibit in space 123
AMERICAN INJECTOR COMPANY
1481 FOURTEENTH AVENUE, DETROIT, MICH.
Pacific Coast: Van D. Clothier, 1015 E. 16th, Los Angeles, Calif.

Silmer BELTS

MAKE OVER 41% CLEAR PROFIT
with GILMER 35-R BELT ASSORTMENT
YOU PAY $19.98
YOU GET $34.18
YOU MAKE $14.20

Described and illustrated in the Gilmer Belt Catalog. Use Gilmer f. h. p. Belts. Belt engineers build them. Get your Gilmer Catalog *today.*

L. H. GILMER COMPANY, Tacony, Philadelphia

MILLS
COMPRESSORS
for Commercial Use
Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois

A New Line for '39
Alert Distributors Write or Wire Today
KOCH REFRIGERATORS
North Kansas City . . . Missouri

TWELVE NEW SENSATIONAL IMPROVEMENTS

New KOCH ECON-O-CASE has Everything

Nameplates *in Perpetual Motion*

Constantly working for more sales. Without obligation let our artists create for you an embossed nameplate that will go far beyond merely identifying your product. Today—write for details that will make your plate part of your sales force.

American Emblem Co., Inc.
Earle Blvd., Utica, N. Y.
Sales Offices: New York, Chicago, Philadelphia, Dayton, Detroit, St. Louis, Los Angeles. Representatives in all major cities.
1914—Our Silver Anniversary—1939

SILVER ANNIVERSARY

HENRY *THE PRODUCT OF EXPERIENCE*

This year we celebrate our silver anniversary, and to the industry we serve, our gratitude is extended for the support and confidence that have enabled us to reach this period of growth.

Interwoven with the destiny of every company that has survived a quarter of a century, there is a policy—a guiding principle whereby the shuttling threads of business enterprise are joined into a fabric of enduring worth. From the beginning, our policy has been to bring you products embodying the most advanced engineering design and exclusive features of construction. The merits of this policy have been proved with the years. Value rarely goes unrecognized, and thanks to your response, the Henry line today is the most complete of its kind in refrigeration and air conditioning.

But, having reached a quarter-century mark, we are not inclined to rest on past-won laurels. Therefore we reaffirm our pledge that in the coming years we constantly shall strive to design and manufacture products which, because of their superior value, can always be relied upon to bring you added sales and profits.

STOCKED AND SOLD BY THESE LEADING JOBBERS

Atlanta, Ga.	Leo S. Bosarge Co.
Atlanta, Ga.	Bowen Refrig. Supplies, Inc.
Atlantic City, N. J.	Atlantic City Auto Sup. Co., Inc.
Baltimore, Md.	Melchior, Armstrong, Dessau Co.
Beaumont, Tex.	Standard Brass & Mfg. Co.
Boston, Mass.	A. E. Borden Co.
Buffalo, N. Y.	Root, Neal & Co.
Cedar Rapids, Ia.	Dennis Refrigeration Supply
Charlotte, N. C.	Henry V. Dick & Co.
Chicago, Ill.	Aire Supply Co.
Chicago, Ill.	Harry Alter Co.
Chicago, Ill.	Automatic Htg. & Cooling Sup. Co.
Chicago, Ill.	H. W. Blythe Co.
Chicago, Ill.	Borg-Warner Serv. Parts Co.
Chicago, Ill.	H. Channon Co.
Chicago, Ill.	Fred C. Kramer Co.
Cincinnati, Ohio	Merkel Bros. Co.
Cincinnati, Ohio	Williams & Co., Inc.
Cleveland, Ohio	Harry Alter Co.
Cleveland, Ohio	Refrig. Sup., Distr. of Cleveland, Inc.
Cleveland, Ohio	Williams & Co., Inc.
Columbia, S. C.	Henry V. Dick & Co.
Dallas, Tex.	Electromotive Co.
Davenport, Iowa	Republic Electric Co.
Dayton, Ohio	Allied Refrig. Co.
Dayton, Ohio	W. H. Kiefaber Co.
Des Moines, Iowa	Iowa Radio Corp.
Detroit, Mich.	J. M. Oberc, Inc.
Detroit, Mich.	Young Supply Co.
Fort Wayne, Ind.	H. J. Schroeder Co.
Fort Worth, Tex.	McKinley Refrig. Sup. Co.
Houston, Tex.	D. C. Lingo Co.
Houston, Tex.	Standard Brass & Mfg. Co.
Houston, Tex.	Walter Refrig. Sup. Co.
Indianapolis, Ind.	F. H. Langsenkamp Co.
Kansas City, Mo.	Forslund Pump & Mach. Co.
Knoxville, Tenn.	Leinart Eng. Co.
Long Beach, Cal.	L. B. Marsh Allied Refrig.
Los Angeles, Cal.	Frank Gillett Co.
Louisville, Ky.	S. W. H. Supply Co.
Madison, Wis.	Gustav A. Larson Co.
Memphis, Tenn.	United Refrig. Sup. Co.
Miami, Fla.	Jamita Co.
Milwaukee, Wis.	Gustav A. Larson Co.
Milwaukee, Wis.	Refrig. Specialty Co.
Milwaukee, Wis.	Thermal Co., Inc.
Minneapolis, Minn.	Refrig. & Ind. Sup. Co.
Minneapolis, Minn.	Vincent Brass & Cop. Co.
Montgomery, Ala.	Teague Hdwe. Co.
Montreal, Que.	Railway & Eng. Specialties, Ltd.
Nashville, Tenn.	Buford Bros., Inc.
Nashville, Tenn.	Electra Distributing Co.
New Haven, Conn.	Resco, Inc.
Newark, N. J.	T. W. Binder Co.
New Orleans, La.	Enochs Sales Co.
New York, N. Y.	Harry Alter Co.
New York, N. Y.	Federal Refrig. Corp.
New York, N. Y.	A. P. Miller Sup. Co., Inc.
New York, N. Y.	Paramount Elec. Sup. Co.
New York, N. Y.	Servicemen Sup. Co.
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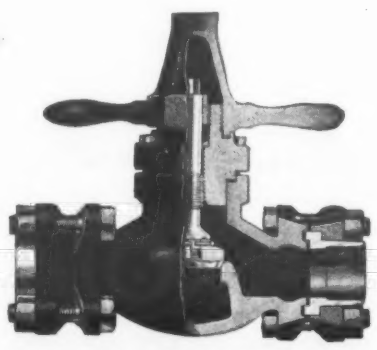

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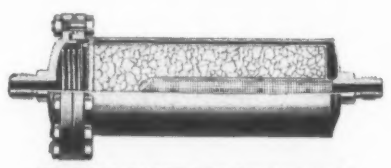

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